Piano Technicians Journal
MAY 1980

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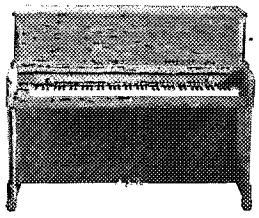

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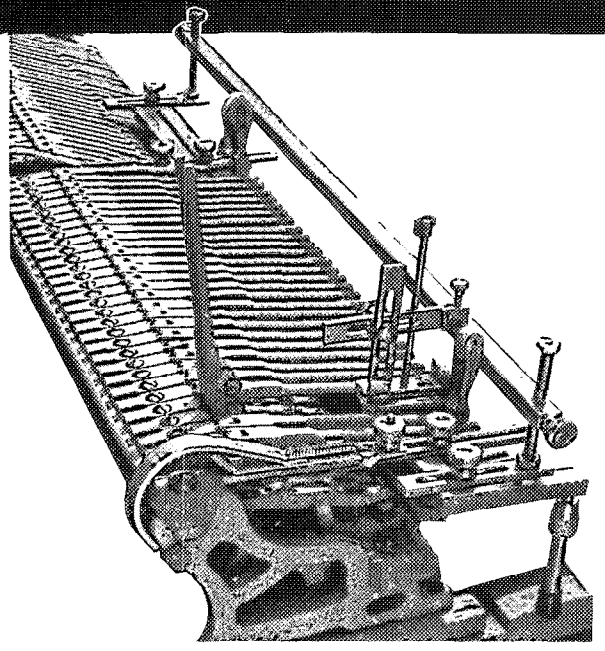

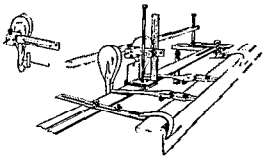

JARAS GRAND PIANO HAMMER INSTALLER is by far and away the most accurate and efficient hammer installation jig on the market today. Over two years have been spent in the development of the jig that consists of all aluminum and stainless steel parts. The unit is lightweight and can be adapted to any grand keyboard. Upon setting the two end guide hammers to correct pitch, side angle and traveling distance, an entire section can be installed quickly with exact precision. Full instructions are available with the hammer installer.

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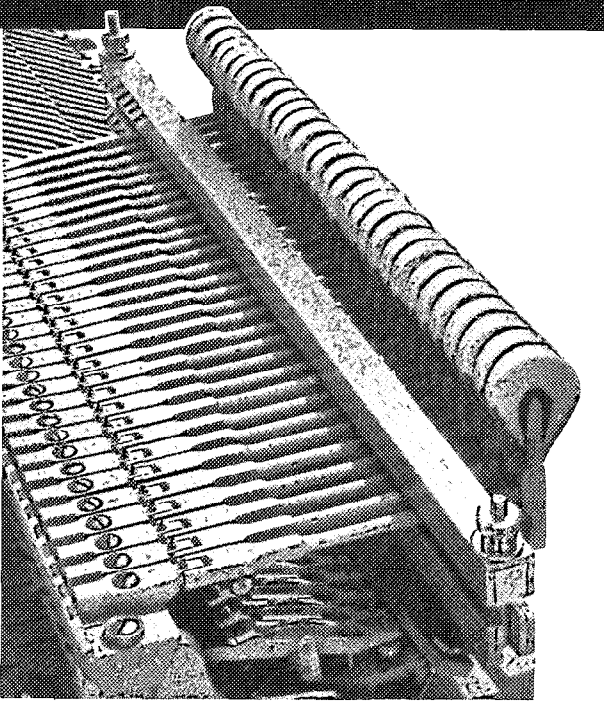

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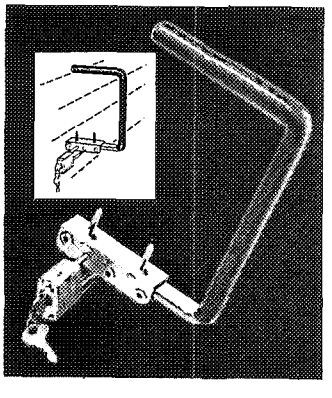

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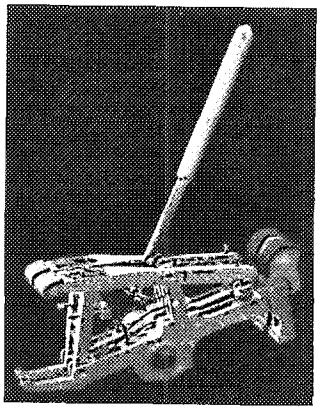

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Official Publication of the Piano Technicians Guild/May 1980 Volume 23 Number 5

Piano Technicians Journal

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Cover ... One of the largest Coinola orchestrations made, introduced in 1920 had a keyboard orchestration with the extra instruments (xylophone as the solo instruments plus drums and taps) housed in a glass extension on top fronted with opalescent art glass. Only 75 to 100 were sold at $2200.

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113 Dexter Avenue North
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Telephone: (206) 283-7440
682-9700

Office Hours: (Pacific Time)
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PIANO TECHNICIANS JOURNAL, the official publication of the Piano Technicians Guild, is published monthly and issued to members. Annual subscription price: $40 per year; $72 for two years; $3.50 per single copy. *Editorial Offices:* 113 Dexter Avenue North, Seattle, WA 98109. Telephone: (206) 283-7440 or 682-9700. **Closing date for copy and advertising is six weeks prior to date of publication.** Advertising rates are furnished on request.

Reprints of most articles are available from the Guild home office, 113 Dexter Avenue North, Seattle, WA 98109. Price per page (plus postage): Single copy, 25 cents; eight copies, $1.00; and 100 copies or more, $8 per hundred.

Second Class postage paid at Seattle. US ISSN 0031 9562 Foreign and Domestic.

EDITORIAL

Don L. Santy, Executive Director

We are, by and large, purveyors of service. Unless we are personally up to traveling from place to place, we cannot make a living. How many people are willing, or able, to deliver their pianos to your place of business for tuning?

Since we have to get from place to place, the mode of transportation becomes paramount to our existence. And since the automobile generally serves this need, are you aware of what's going on in this industry? Have you considered your **actual** business costs in relation to the use of your automobile? The Hertz Company just came out with some dandy figures on the cost of running an automobile that should be of interest to all of us.

We used to charge 15¢ per mile auto allowance. Now 30¢ is closer to the cost for business use, while 50¢ per mile is considered **actual** cost. If you charge $30 to tune a piano and it costs you 50¢ per mile to get the job done, and you have to travel 25 miles to get there, you have already blown $12.50 of your fee. That is **42%** of your fee just to get there. This is one reason why vendors who travel to a home or place of business may charge their hourly rates at portal-to-portal.

Increases in automobile costs have occurred more and more frequently in the past five years. Have you adjusted your billing to reflect it? If you haven't, you are probably wondering why you can't make more money in your business. This is only one facet of our current volatile economic order, or disorder, depending on your point of view.

Good friend **Ben McKlveen** has some interesting comments in the Cincinnati newsletter worthy of your attention. I will take the privilege of inserting his article as my guest editorial this month.

ECONOMICALLY SPEAKING

This month I am going to deviate from my usual technical format and write about economics — specifically about inflation and its effect on us as piano technicians. Several recent articles in *Newsweek* and the local Cincinnati papers have dealt with the general theme of living with inflation, and with business practices and personal ways of life during these times.

Recently, the country has been talking "recession", but nothing has materialized to dampen double-digit inflation. How much inflation have we and how long can we expect it to go on? Consider the following quotes: Paul Samuelson in *Newsweek* had this to say about recession "... the American economy has produced no more than a mouse of a growth recession. The Federal Reserve has kept the faith and a rein on the money supply. Housing starts are down and the speculative real estate bubble has encountered stable or falling home prices. But consumers have been cutting down on their savings rate so that their living standards won't fall as much as their real after tax incomes are falling. The stock market acts as if it wants to have an excuse to go up. ... the United States economy is not yet showing any signs that the rate of inflation is abating. I am forced to the conclusion that, whoever is elected President, Americans will be living with inflation for a long time to come."

Jane Bryant Quinn, writing in the *Cincinnati Enquirer*, said that the government predicts inflation will slow to 10.4% this year and 8.6% in 1981. But this is a compounded increase of 20% over the next two years, so every 1980 dollar will be worth 80 cents in 24 months.

In another article, she wrote about inflation in Argentina. Prices there rose **187%** last year; in 1975, the cost of living rose **1000%**. Miss Quinn spoke of a talk given by Arturo Carou, President of the Argentine affiliate of Joseph E. Seagram & Sons, Inc. His message to American business: "You can make good money, even under triple digit inflation. But to survive, you'll have to change your way of doing things."

Some of his advice is pertinent to us as small businessmen and piano technicians. He suggests that it's a mistake to hold prices flat for several months (or years, in our case) and then impose a big catchup increase. For a more predictable stream of business, change prices more often and in smaller increments, never announcing any changes in advance. This pattern becomes normal and buyers adjust.

We technicians have a case in point with the price of gasoline. It has doubled in the last year but the raises have been inching up by pennies at a time. Gas is a factor in the cost of our doing business, and should be reflected in the price we charge for our service.

Mr. Carou made some other suggestions which I have paraphrased to apply to our work. For example, business tries to keep inventories as low as possible, but when prices rise rapidly, stocking up on popular high turnover items may be your best possible investment.

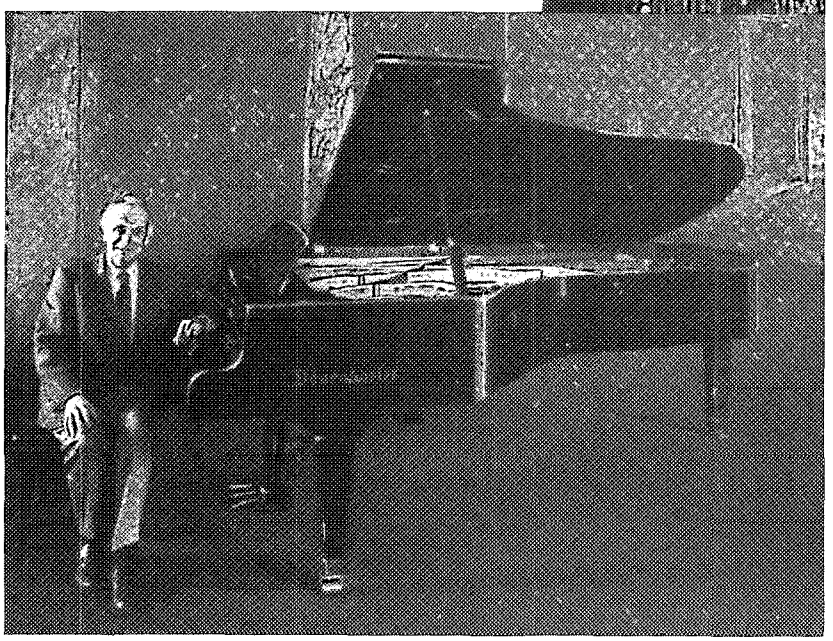
Willard Sims has always said that retail prices should reflect (1) the wholesale price you expect to pay when you replace the goods now in your inventory, (2) your increased expenses during the time you hold these goods and supplies, and (3) something for contingencies and profit.

It has been suggested also that businesses grant less credit in an inflation economy, because the longer it takes to collect the money, the less valuable it is. So aim to get paid for your services as you go, and if you must bill for your services, take the cost of billing into account and let that cost be reflected in your billed charges. Be especially careful in putting out bids. Make sure you have time limits on them and that they reflect what you may have to pay for parts and supplies somewhere down the road.

It might be wise to review your whole price structure for your goods and services. People will always gripe about cost; this goes on during good times and bad. But if you begin to hear comments like, "Is that all? I thought it would be more," when you present your bill for piano service, you can be sure you have sold yourself too cheaply. — **Ben McKlveen**

A man and his piano:
Yehudi Menuhin & Bösendorfer

"In my mind, Bösendorfer is one of the world's great pianos with a great tradition born in the city of Beethoven, Brahms and Schubert which has a special affinity with the string player's conception of sound".



The renowned violinist, *Yehudi Menuhin,* seated at the beautiful Bösendorfer piano in the London Showroom.

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PRESIDENT'S MESSAGE

Bob Russell,
President

At times it seems that people forget they have a responsibility to their fellow man and society. Too often we tend to forget that we are given talent and ability in a certain field for only a short time, *our lifetime, and we have an obligation* to use it fully and perhaps pass it on to someone else. Sometimes I feel that obligation is a word or feeling that is becoming more and more rare in our society. In fact, the Piano Technicians Guild is one of the few organizations I know of whose general ideas and ideals of obligation are still prevalent.

When I was a boy we had a small farm with a well. The well had cool and sweet tasting water, especially on a hot day. But it also had a hand pump which needed to be primed each time we used it. I was taught at an early age that you must always leave a jar of water next to the pump for the next person to prime the pump with. At the time I didn't realize that this was one of my first lessons in responsibility and obligation. As I matured I learned many more responsibilities and obligations which were good for me and made my life more meaningful and worthwhile.

This July, at the national convention in Philadelphia, your national board and council will be making decisions that will affect all of us. Most delegates will be given directives by their chapters. *Some will be given directives, but* with the provision to use their own judgement if circumstances or amendments make an issue more acceptable. We know that some chapters are more political than others, but I feel that all chapters are, or should be, interested in the progress and changes taking place in the Guild. We need the input from the entire country — every chapter, every member — in order to make fair and practical progress. We all enjoy the institute classes which are at a high and exciting level, but let's try to get 'into' the council business with that same enthusiasm. Your council delegate and your chapter have a very important responsibility, echoing your voice and your vote.

We must always remember just what the impact, or future impact, is for the Guild. What will a new bylaw accomplish for the average Guild member trying to make a living while developing and honing his or her skills? We have a distinct **responsibility** and **obligation** to think, discuss, amend and cast our vote in a factual, realistic and intelligent manner for **all** members of the Piano Technicians Guild. □


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THE TECHNICAL FORUM

Jack Krefting, Technical Editor

In the February 1980 issue, Don Flippin suggested that we publish a series of articles on basic rebuilding, saying that much of our material assumes too much prior knowledge on the part of the reader. I relayed the question to our readers, and the response was predictably mixed. Some correspondents felt that it would be difficult to get much more basic than we already are, and others frankly liked the idea and voiced approval. Still others indicated a preference for maintaining the status quo. So much for surveys.

It would seem that the range of knowledge and experience of our readership is greater than that of any other professional publication, ranging from the fascinated part-timer to the experienced piano man, and even to rank beginners and seasoned experts. The technical content of The Journal must appeal to this wide range, and is apparently doing so. Experienced technicians remember how tough it was to get started, and cheerfully tolerate basic material even though it is of little use to them; and beginners let the advanced material go over their heads without comment, gleaning what they can and filing some of it for future reference. Novice or expert, we are bound together as a group by the common bond of fascination for that instrument about which we can never know enough.

As always, we welcome constructive criticism of our efforts to bring you the best technical information and discussion, presented in a manner understandable to the majority of readers.

VERTICAL DAMPERS

Damper regulation is not really difficult at all, especially compared to the fine art of tuning; yet the average technician has more trouble correcting damper problems than tuning problems. One reason for this might be that we are constantly practicing our tuning, but not our damper regulating. Another reason might be that the average client will not notice minor flaws in the tuning, but is very alert to a ringing harmonic or a note that will not damp properly. When such problems crop up, many of us are not really equipped to handle them efficiently, we are not in practice, or we don't have the right tools, or both.

I have described my vertical damper tool before, but for the benefit of newer technicians the description bears repeating. It is a copy of a factory tool, unavailable at supply houses and twice as good as anything they offer for the purpose. Best of all, it is easy to make (**see Figure #1**). Flatten the end of a piece of ¼" diameter steel rod (available at most hardware stores) by hammering it on an anvil until it is ⅜" wide and slightly curved. The tip will now be about ⅛" thick. File a slot in the tip, ⅛" wide and ⅛" deep. Smooth any rough surfaces with the file, and the business end of the tool is finished. Cut the other end off about 16" from the tip and epoxy it into a large dowel or other suitable handle so that the overall length of the tool is about 18".

Presently we will talk about how to use this tool; but first, a few trouble-shooting tips. Damper misalignment with the strings is immediately apparent, and the solution is obvious. But if the alignment appears to be satisfactory, check for foreign substances on the face of the felt. Next, press the strings of the unison toward the plate with your thumb. The damper **must follow** the strings at least ⅛". If it does not, the lifter rod or the spoon is the culprit. Check the spoon by slowly depressing the key; the damper should not begin to move until the hammer is halfway to the strings. If it moves early, bend the spoon back toward the action rail and try it again. Also make sure that there is some lost motion in the pedal before the dampers start to lift. Manufacturers might specify ⅛" or ¼" or lost motion at the tip of the pedal, but whatever the numbers, they all

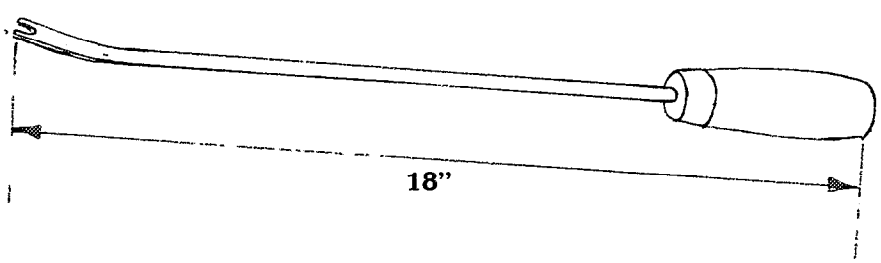


FIGURE #1

agree that *there must be some lost motion.* This also goes for the center pedal if its function is to lift the bass dampers. Wurlitzer uses a dummy damper with an extra-heavy spring to ensure that the lifter rod cannot inadvertently hinder the follow, but even this precaution does no good if there is no lost motion at the pedal.

In the case of bichord wedges that are malfunctioning, pull the damper away from the unison and let it snap back, watching the strings. They should both move by an equal amount when the wedge seats between them. The visually impaired technician might find it possible to check this by placing a fingertip lightly on the two strings just above the damper, judging by feel whether both strings move.

In **Figure #2** we are trying to illustrate the three planes of alignment of the damper head and block. Think of each dotted line as an axis; for example, the line AA represents the adjustment necessary to make both top and bottom of the damper felt touch the unison simultaneously. This is done by bending the wire just below the block in a forward or backward direction. The factory tool described earlier is inserted between hammer shanks, above the rest rail, about 14 hammers to the right of the damper to be adjusted. This distance is important for the angle of the bend, and is the reason for the unusual length of the tool. A shorter tool would do the job after a fashion, but would tend to bend the wire to the right at the same time it is being bent forward.

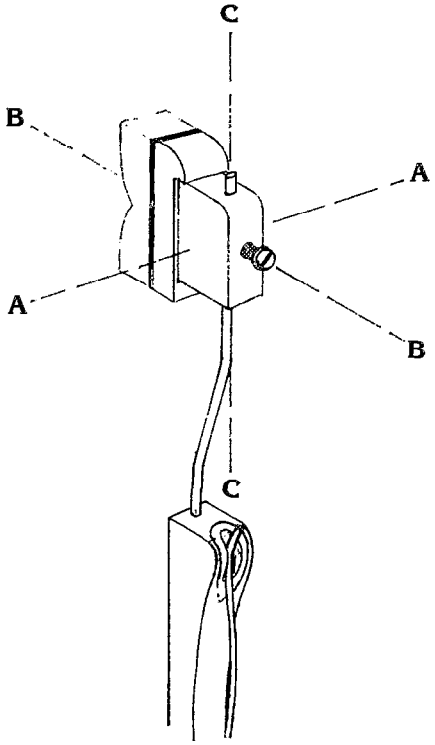


FIGURE #2

Line BB represents the adjustment that makes the head parallel to the strings of the unison, and is accomplished by bending the wire just below the block from side to side. A shorter tool would do the job just as well in this instance, because the tool is inserted straight in from the front of the action. Remember that if this adjustment causes the damper to be spaced too far to one side, a corresponding bend must be made at the bottom of the wire, and then the head alignment rechecked.

Line CC indicates the twist of the head and block on the wire. This can sometimes be adjusted by loosening the screw and repositioning the block on the wire, but a much better method is to insert the slot of the factory tool around the shank of the screw from above and twist.

Figure #3 shows the various axes around which the bending takes place, and the dotted lines also indicate the angles at which to insert the bending tool. In action building, line EE would be the first bend made, which will space the block to the unison. Then FF is done to align the block parallel to the strings of that unison. The felted heads are now glued to the blocks, with the pressure of the damper springs clamping the glue joint. Next, the wire is bent on the axis GG for evenness of lift with the pedal. The builder then checks to be sure that the felt touches equally at the top and bottom, adjusting by bending the wire on the axis HH. The technician must remember that any bend at the bottom will necessitate another bend at the top, and very often the opposite is true as well.

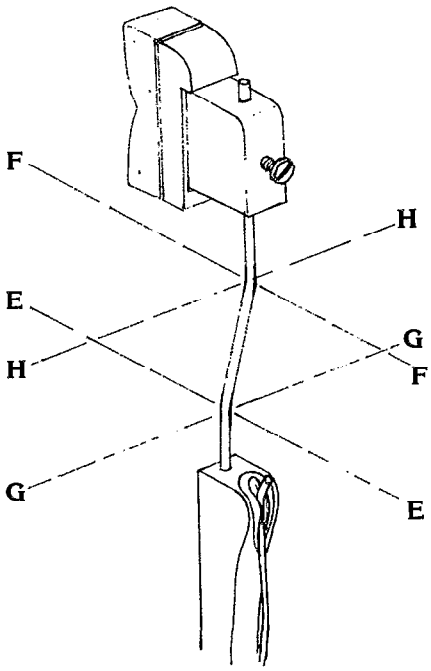


FIGURE #3

If the dampers lift evenly with the pedal but one end lifts slightly before the other, the hangers may be bent with the same factory

tool, as shown in **Figures #4 and #5.** Assuming the rod arm is at the bass end and the bass dampers are lifting early, place the tool between the arm and the plate and lever the arm toward you. For the opposite effect, slip the tool between the lifter rod and the action rail and pry the rod outward. As a precautionary note, I will say that before bending hangers in this manner be sure that they are securely fastened to the rail and that no hooks are broken. Usually the action must be removed to verify this.

KEY HEIGHT

QUESTION: *"Recently, while going over a relatively new Steinway D, I noticed that the key height was significantly higher than the measurement called for in the manufacturer's specifications. When asking around, I am told the reason is because that height was considered best for that piano. This leads me to my question: what are the considerations that go into the setting of the best key height for a particular piano, both at the factory when the piano is under construction, and in the field after a period of time?"* — **Fred W. Tremper, Maywood, Illinois**

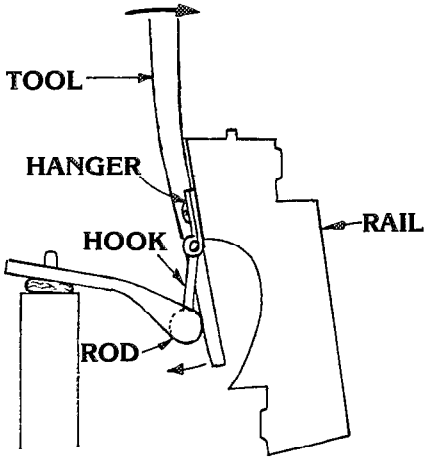


FIGURE #4

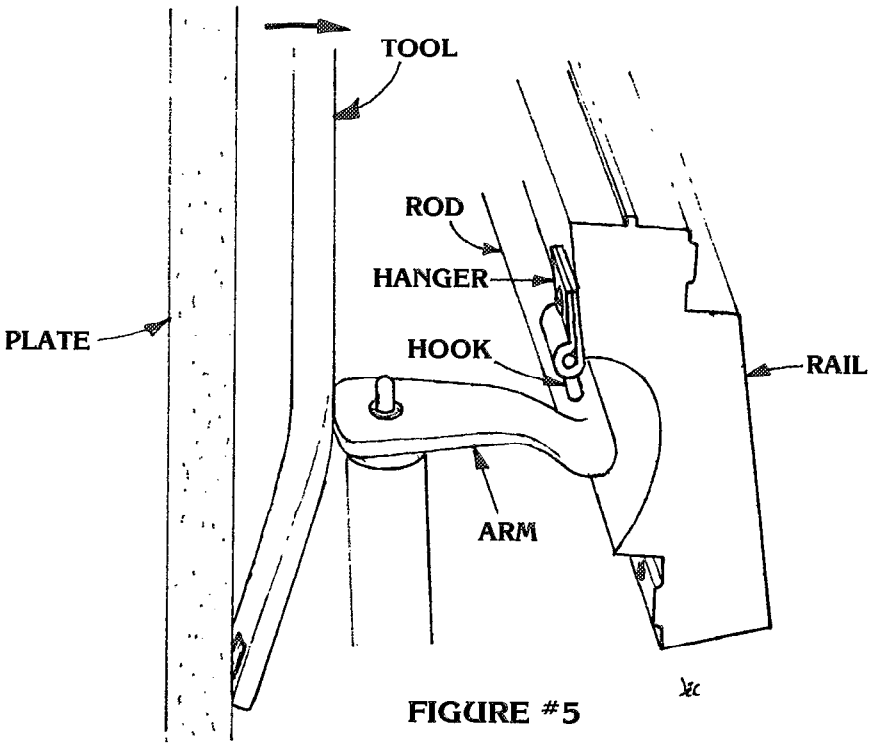


FIGURE #5

ANSWER: Whether the piano is under construction or renovation, the considerations would be the same, because the dimensions of the parts must be taken into account. First we must consider the keyframe.

In order to allow for adjustment of level and dip, both the front rail and the balance rail should have paper punchings under the cloth. Too many punchings invite instability, especially at the balance rail, while too few will limit the range of possible adjustment. I don't like to see a quarter of an inch of paper on the balance rail, but there must be sufficient height at that point to permit full dip at the front rail with room to spare for a safety factor.

All manufactured parts are made to dimension, but with what is known as *tolerance.* Tolerance is the amount over or under the designed dimension that can be allowed, usually plus or minus .005 or ½°. The closer the demanded tolerance, the more costly the finished product because more parts must be discarded per hundred usable parts. Even in aerospace machining, or watchmaking, there are tolerances; the piano industry, working with materials notoriously subject to dimensional change, must accept tolerances in even greater degree than some others.

Suppose the balance rail has a thickness tolerance of, say 0.010", and happens to be at the minimum dimension. Now let's further suppose that the front rail, with the same tolerance, happens to be at maximum. When these two parts are assembled, we have what is known as a "stack-up of tolerances." The balance rail is 0.020" lower than it should be in relation to the front rail; in order to get enough dip, there will have to be a higher stack of paper on the balance rail than we would have liked. A compromise was made, like it or not, to keep the production line moving.

Next we must consider the fly parts that surround the keyboard. They are also made to specification with a given tolerance, and could be slightly over or under designed specifications. If the keys are too high they could slap the bottom of the fallboard on return to rest position, or they could allow the pianist to view the

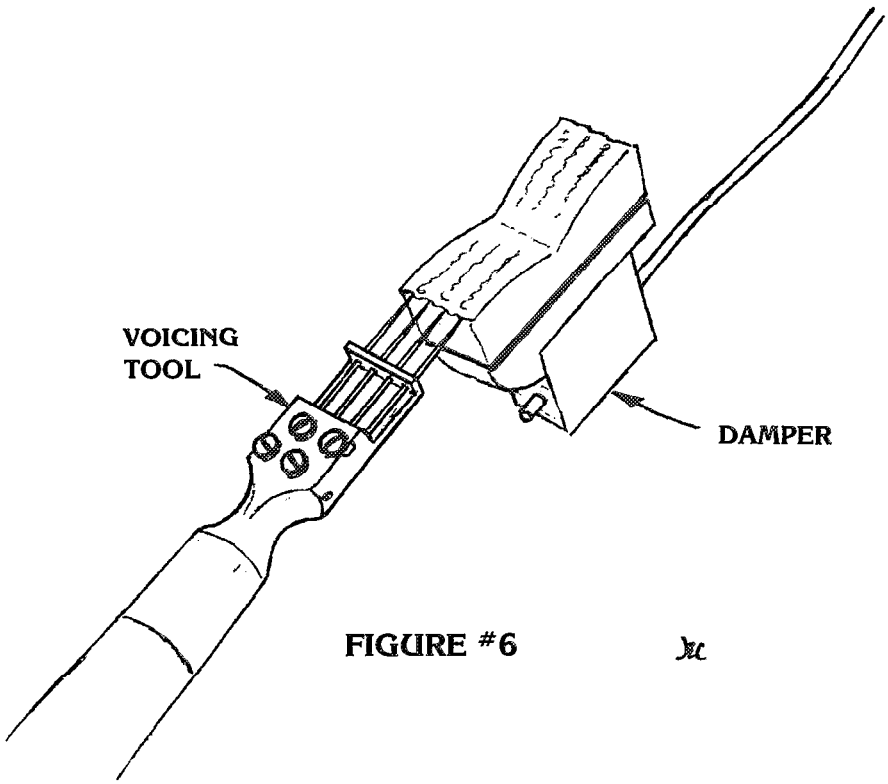


FIGURE #6

front rail punchings because the bottom of the key is above the top of the keyslip. Worse yet, the keys could be so high that they rise above the front rail pins when at rest, allowing them to slap together on a glissando.

If set too low, the overhang on the natural keys could slap against the keyslip, or the wood of the keys behind the key covering would be visible under the fallboard. Compromises can be made here by the manufacturer when the fly parts are fitted and trimmed, but the technician cannot change these dimensions easily. Therefore, he must use the existing fly parts to help determine the key height when leveling keys, whether or not the ultimate height conforms to the specification in the service manual.

To damp properly, the felt must not only be properly aligned; it must also be resilient and free from surface contamination. If the face of the felt on a creased or flat damper is crusty, it is possible to peel the outer few layers off, exposing soft felt underneath. The trick here is to peel the felt evenly. One way to do that is to insert the needles of a voicing tool at the spot where the layers should be removed (**see Figure #6**) and peel the felt starting at that point.

Wedge felt that is too hard can be partially improved by filing and needling. If too soft, it can be ironed with a heated pallet knife. Trichords that seem to damp the center string better than the outer strings can be corrected by cutting the slit deeper with a hobby knife or razor blade. The biggest problem with trichord dampers in a vertical piano is that the strings must be accurately spaced on a the V-bar. If the tuning pin alignment is not good or if the pressure bar is not tight enough, the strings may wander on the V-bar, and that is sure to cause trouble in the trichord area.

Possibly the most frustrating aspect of vertical damper servicing is that of harmonics singing after a staccato blow. Vertical pianos are particularly susceptible to this because the dampers are on the same side of the strings as the hammers, making it impossible to position the damper felt over the strike-point node, where damping would be most effective. Here are some trouble-shooting tips which may help to isolate the cause:

1. Strike the offending note and release it, immediately placing a thumb on the strings of that unison. If the overtone stops, you know that the problem is in that damper.

2. If the harmonic does not stop, keep playing the note with staccato blows while alternately muting groups of other strings, under the keybed, if necessary. Isolate the unison which is causing the trouble.

This quick two-step procedure identifies the true offender so that the technician may avoid the common error of assuming that harmonics are always caused by bad damping on that particular note. In fact, as often as not, the harmonic will come from another unison entirely. A maladjusted damper elsewhere in the scale may be defining a node, as we discussed in a recent issue, and sympathetic vibration will then cause the lower segment of the strings to speak. The most common example of this phenomenon I have observed is in the tenor or upper bass, with the sixth partial clearly audible after a staccato blow.

Let's say that F21 is the offender. Its sixth partial would be C52, but that doesn't necessarily eliminate all other dampers from suspicion, since a lower note could have a damper that either defines the speaking length of C52 or produces the reinforcement of the partial. **Figure #7** shows that the dampers should be placed as high as possible to avoid this problem, preferably just 1/8" below the bottom of the nearest hammer. This small clearance is needed because there is so much deflection of the shank on a hard blow that the hammer moves up and down considerably.

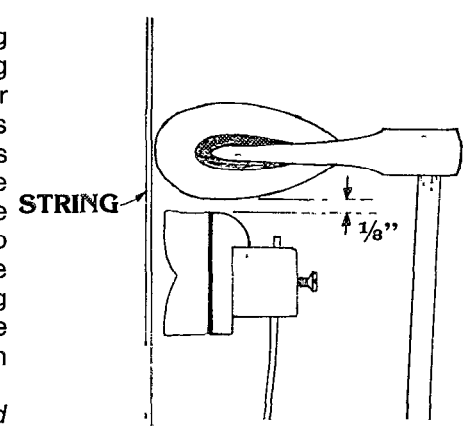


FIGURE #7

In this instance, we would try muting the bottom of the offender first. If that stopped the overtone, our logical move would be to raise or lower the F21 damper, preferably the former. One way or another, the bottom edge of that damper must be moved away from the node that is causing the trouble.

In another issue we will try to cover some other important aspects of vertical damper servicing.

PLATE BOLT TIGHTENING

QUESTION: *"... For the past ten years I have been the staff piano technician here at Marshall University. We have a moderately large school of music with around 100 pianos and two harspichords.*

"During our Christmas break just past, while doing some routine tightening of plate bolts on all of the grands in the building, a thought came to mind and I can't seem to get it resolved.

"We have an extreme dryness problem in our building. The relative humidity will plunge to near zero in the winter and rise into the 60s and 70s in the summer. I have climate control systems installed in most of the pianos. It helps a little, but as you can imagine, the environment still plays havoc with tunings, regulation, pin-blocks, etc. Nothing new about that, right? Well, every year I go around and tighten down plate bolts and they always need tightening. Now the problem.

"If the plate bolts around the perimeter and in the plate web are loosening up, then are the nose bolts coming up too? And if they are, even a tiny bit, won't tightening down the perimeter and web bolts put the plate under stress?

"I've not had any complications as yet because of this and I've been here a while, but it seems to me that this should be what's happening. And if this **is** *the case, then shouldn't the nose bolts be brought down? Except ... how much? It's an enigma that I would like to hear your comments on."* — **Paul Dempsey, Jr.**

ANSWER: The portion of the nosebolt that is visible from above the soundboard is by far the smallest part in cross section. In most pianos, the portion that threads into the beaming is at least twice as large in diameter as a perimeter bolt, and even larger compared to a web screw. The threads are coarser, too, and bite deeper into the wood. For these reasons, there is probably less upward movement in the nosebolts than around the perimeter.

This is not to say that nosebolts do not move, because some of the same forces which cause looseness in perimeter screws are obviously acting on the nosebolts as well. As wood dries out, it shrinks away from the threads, loosening the fit of any screw. The differences here are (1) the diameter; (2) pitch and depth of threads; (3) species of wood in the threaded hole; (4) tapered vs. straight thread; and (5) function of the part.

Nosebolts are never tapered, because if they were it would be next to impossible to adjust them to the height of the plate during building and rebuilding. Perimeter screws are sometimes tapered and sometimes not, but their function is simply to hold the plate down, a simpler function than that of the nosebolts. Web screws, except for very unusual installations, are severely tapered.

A tapered wood screw has a greater tendency to loosen in dry conditions than a straight-threaded bolt, because as the wood shrinks away from a tapered hole, each thread has less wood above it to lend support. In a straight hole, on the other hand, each thread is supported by the same amount of wood above it as the next thread, and the next, and so on. So, in dry conditions, the tapered screws will become looser than the nosebolts.

The other factor to consider is that it is always obvious how much a perimeter screw should be tightened — one simply turns it until it is tight — but with tension on the piano, it is impossible to tell whether a nosebolt has moved upward or not. And, because of the coarser thread of the nosebolt, turning it the same number of degrees as a perimeter bolt would drive it much further down, stressing the middle of the plate downward. This could easily result in a broken plate sooner or later.

My considered opinion, then, is that the nosebolts should be left strictly alone, even though perimeter and web screws are periodically tightened. Even if the nosebolts do move upward in dry conditions, and it is reasonable to suppose that there would be some slight movement, the risk of damage is greater if the technician tries to make an adjustment than if he just ignores them.

CENTERPINNING

Roland Grittani of London, Ontario, Canada, asks the following three questions on pinning:

QUESTION: *"... if a piano is on a slanted floor, as is the case in some older homes, can one expect uneven bushing wear? I'm thinking particularly of grand hammer flanges. The piano tilts sideways."*

ANSWER: I would not expect unusual bushing wear in such a situation. We must remember that the jack is tilted to the same degree as the hammershank flange, and that the primary bearing force would be at the bottom of the bushings in the hammershank. This force would be at its greatest when the key is first set into motion, decreasing quickly as the hammer and shank gain momentum. From that point until the hammer strikes the string, a much smaller force would be exerted on the bushing. This bearing force would be against the front of the bushing because the mass of the hammer, having been set in motion, resists turning in the arc to which it is limited by the flange center. The shorter the distance between the centerline of the hammer molding and the center of the centerpin, the greater this resistance would be.

The third force exerted against the bushing would be the jarring shock when the hammer strikes the string, and the fourth would occur when the backcheck catches the hammer and forces it forward. Considering the size of the bushing, these are impressive forces; one wonders how a center can hold up as well as it does.

Properly fitted and pinned, a hammershank center will absorb countless stresses before showing signs of wear. Compared to the forceful thrust of the jack, the slight extra bearing force exerted by an uneven floor would be insignificant, in my view.

QUESTION: *"Secondly, with the more intensive restoration of older pianos these days, I would be grateful for some thoughts regarding center-pinning abstracts. How tight, and the recommended technique for hitting the bushed hole behind the wood."*

ANSWER: Rather than using the terms "tight" and "loose" to describe the fit of an action center, terms which imply that it is too tight or too loose, I prefer to talk in terms of "firm" and "free". The abstract is one of those centers which must be very free. Its sole function is to keep the sticker on the capstan, and any friction in excess of that required for that function could hinder repetition. If a gram resistance gauge is used to verify the freedom, I would say that any measurable resistance reading would indicate that it is too firm.

Hitting the bushed hole with the centerpin is an acquired skill, like bending damper spoons. One improves with practice. Anyone who can eat in the dark without stabbing themselves with the fork can learn to pin abstracts.

QUESTION: *"Finally, with regard to pinning, I have always used a pin rolled between two files as a reamer, assuming that rolling them decreased their diameter. Measurements with a micrometer indicate the diameter increases by 0.002 inches. Is this as would be expected?"*

ANSWER: Yes. The teeth of the file press into the metal, displacing the metal on either side of each tooth. It will not simply compress, and if you are cutting into it there must be a corresponding displacement. If a great deal of pressure were used in the rolling process, the pin would decrease in diameter and the metal thus displaced would move outward to make the pin *longer*; but this situation would not occur during the normal rolling with two files.

This method, by the way, is very effective when a relatively large number of bushings must be reamed. If the bushings have not been mutilated, a dozen or more of them may be reamed with the same pin with good, uniform torque resistance. The pin then starts getting dull and will not ream as well as it did at first. Discard it in favor of a newly-rolled pin; otherwise, the torque will get too high as the reaming effect is lessened.

PINBLOCK "RESTORERS"

Some time ago, during a discussion on pinblock doping, I said I hoped to have some photographs to show what the dope actually does to a block. The pictures you see here were kindly sent in by **John Bloch of Denver**, and we are grateful for this assistance.

Photo #1 shows the top of a pinblock which has been treated. **Photo #2** illustrates that the restorer doesn't actually penetrate very far, ruining only the top lamination and part of the second.

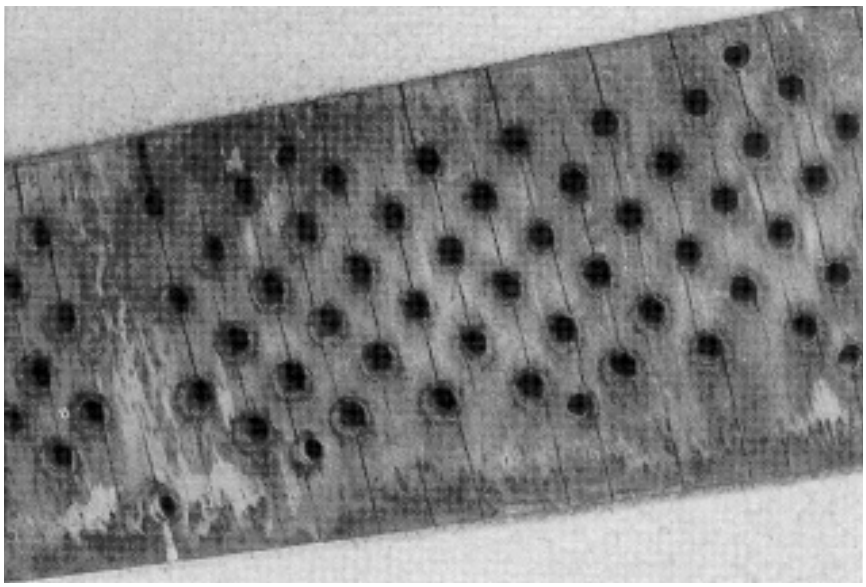


PHOTO #1

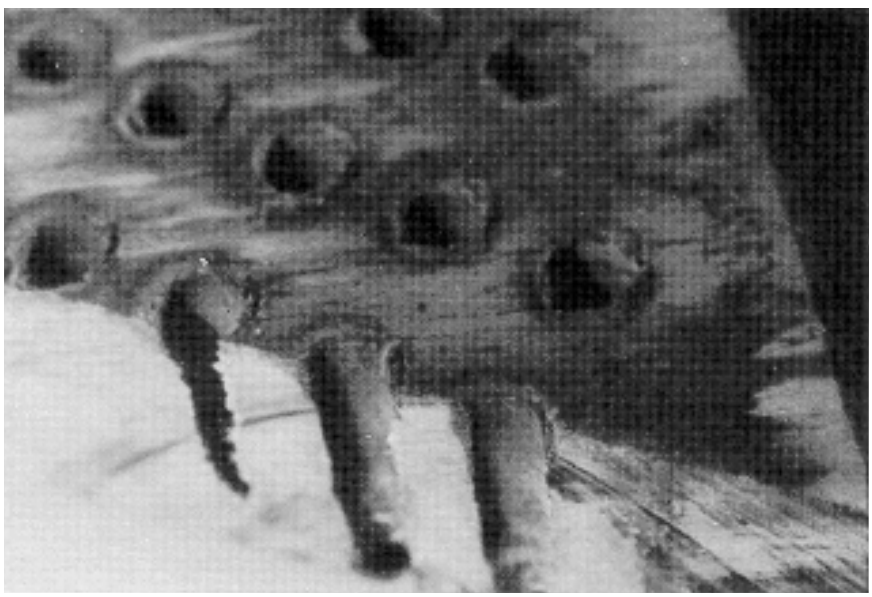


PHOTO #2

Photos #3 and #4 demonstrate how the wood around the top of the tuning pin hole is affected by this "restoration". Need I say more?

TIP OF THE MONTH

Larry Scheer has another tip for those who do not own an action cradle but occasionally work on Steinway uprights with the ball on the bottom of the action brackets. This action will stand on the workbench, according to Scheer, with the addition of two blocks of scrap wood. Drill a ½" hole into each block, press the ball of each end bracket into the hole, and you have a temporary action stand.

BIRDCAGE TUNING

In December, 1979, Bert Blackhurst wrote to describe his muting technique for the birdcage (overdamper) piano, which stirred some interest among our readers who must service such instruments. The following letter from a Minnesota member describes another muting method for the birdcage:

"I have two in my area that I service regularly and, although they have a poor damper system, I do not find them difficult to tune. The actions are removed easily in both pianos, so I remove the action, strip-mute the whole piano, replace the action, and tune just one string per note. Next, I remove the action, replace my strip-mute, skipping every second space between the trichords (and, of course, no mute in the bass), and replace the action. This leaves one untuned string per note sounding with each tuned string. After tuning that untuned string, I go back once more, remove the action, restrip the entire piano, skipping every second space as before — but this time allowing the final untuned string to be free to sound. Finally, I can usually pull my strip-mute out from the end without removing the action.

"I know this sounds like a lot more work, removing and replacing the action at least three times, but this is so easily done (at least in my two cases) that it saves a lot of time in the long run. I just can't imagine trying to tune one of these by sticking rubber mutes between the damper wires.

"If I were in an area where I had more business than I could handle, I might turn these down; however, I live in a town of almost 13,000 and actually enjoy the challenge of trying to satisfy such diverse needs — everything from the relics and cheap spinets to concert tunings. I think the secret in avoiding frustration in tuning the "birdcage" pianos is to not expect to be able to get a really fine tuning on one of these antiques." — **Mike Cady**

IN CONCLUSION

By the time you read this, I sincerely hope you will have made your plans to be with us in Philadelphia for the national Convention. If you have never attended one of our annual affairs, you don't know what you are missing! Great classes in piano technology will be taught by top instructors especially selected for their knowledge and teaching ability, and you will have the opportunity to talk with representatives of the piano manufacturers. You will make new friends, learn more about pianos, and have a lot of fun at the same time. I would especially recommend this for those with lesser experience, because it will prove to be a real boost to your career and your earning power. Best of all, the cost is tax deductible; and yes, nonmembers are welcome! See you there! □

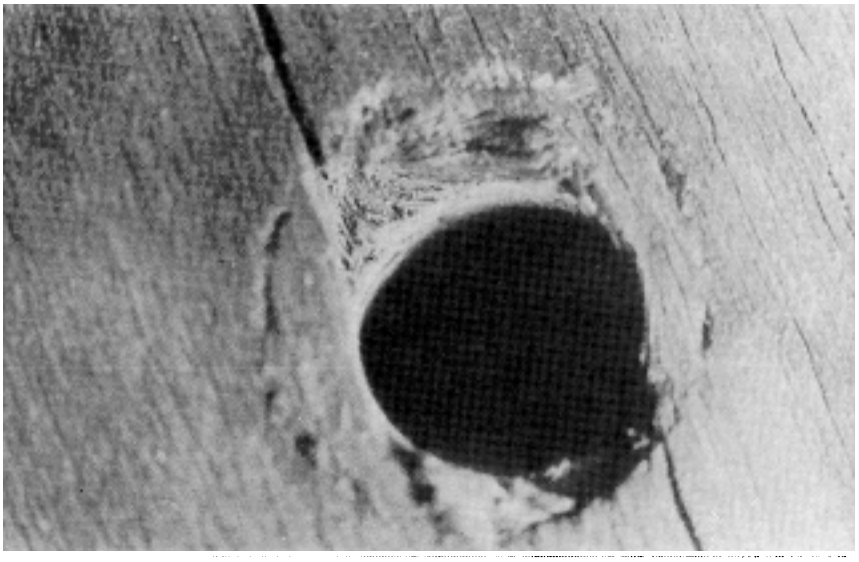


PHOTO #3

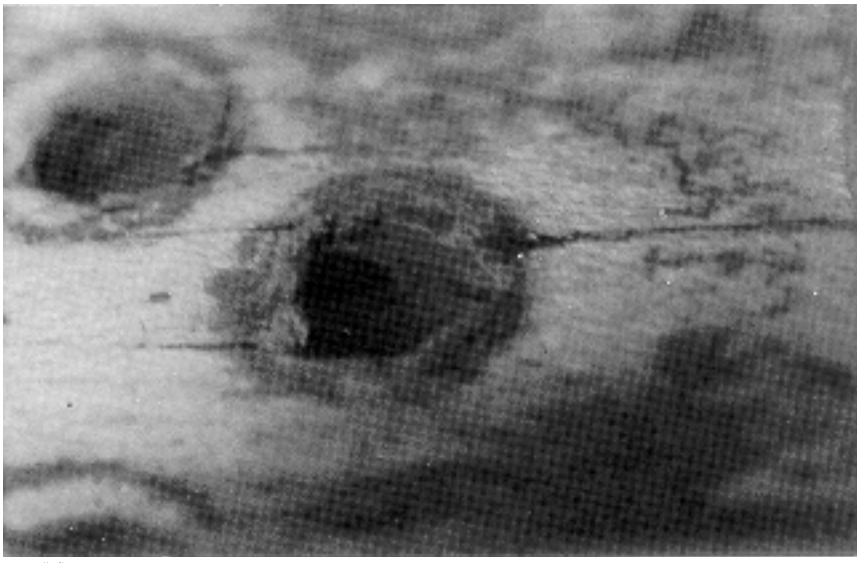


PHOTO #4

The Sling Psychrometer

HARRY RITCHIE

In my work as a piano technician, I have discovered that one of my most important and valuable tools is the sling psychrometer, used to determine relative humidity. I use this little instrument on each tuning job and make a permanent record on top of my billing pad sheet. I find this information helpful, because after the piano has been tuned a few times, I am able to get a fairly accurate picture of the rise and fall of pitch in a particular instrument. True, all pianos will not respond to the same degree, but the pattern is relatively close.

In homes and institutions where tuning is being done twice a year, usually summer and winter, it is possible to come up with some reliable figures in the rise and fall of pitch in drastic changes of relative humidity. One can also get a picture of different makes of pianos and how they react to these changes. As we have learned, some pianos have better stability than others under similar conditions of humidity changes. I'm sure that most technicians have seen pianos fluctuate from an eighth to a semitone in wide changes of relative humidity. I've had some customers call me back from a previous tuning to complain that the piano had gone sour when, in fact, this was putting it mildly. Checking back in my records, I have always found a wide variation in the relative humidity in these particualr cases. In homes where humidity is fairly well controlled, this problem does not exist. If your customer has some knowledge of physics, these matters can sometimes be explained to the customer's satisfaction. However, there are still some people who doubt that man has ever set foot on the moon, and a lengthy explanation might be met with a blank stare and hurt look. If some consolation can be had under these circumstances, your conscience won't kick you for doing a bad job of tuning. I've found that a permanent record of sling readings will do more for your defense than anything else I know.

To those of you who may not be familiar with the sling psychrometer, a brief description of the instrument should be in order. As the name implies, it is virtually a sling with a swivel handle for the purpose of slinging around to dissipate water from a wet bulb. There are two thermometers of the ordinary mercury type mounted parallel on a metal frame, one being a dry bulb and the other covered with muslin. The muslin is saturated with water and the instrument is then slung until the readings have become stabilized. The readings are then noted and a special slide rule is used to calculate the result in relative humidity. Tables can also be used to make this determination instead of a slide rule.

In homes and institutions where the humidity varies on a wide scale, some means of control should be used to stabilize the tuning. This will also add many years to the life of the piano. Much has been written about these problems and its effect upon pianos. Those of us who have been in the business very long know what it can do to our work. I tune pianos for a dealer and many times my work will start at 4:30 a.m., because I like tuning at this hour of the morning. When I walk into the store and take a sling reading, I can usually predict within a few cents where the pitch on most pianos will be. In the newer pianos it's more difficult to determine because they're still in the stretching stage.

We should remember that relative humidity does not express the actual weight or quantity of moisture in the air. It is the ratio of the weight of water vapor actually present in a unit volume of air to the actual weight that would be present if the air were saturated with vapor at its present temperature. Absolute humidity would express the total weight of water vapor in a unit volume of air. This would be expressed in grains of moisture per cubic foot, or grains per pound of air. Dry bulb temperature controls the amount of moisture that air can hold. At zero degrees Fahrenheit a cubic foot of atmosphere can only hold about ½ grain of moisture. At 70 degrees it increases to around eight grains, and at 100 degrees Fahrenheit it increases to around 20 grains.

When we go into the home in winter and find a room temperature of 80 degrees with a relative humidity of 16%, this means the atmosphere is only holding about 1.77 grains of moisture per cubic foot when it should be about 4.64 grains per cubic foot. Little wonder the pitch has dropped and the tuning pins are loose.

The first thing a doctor will do to check your body condition will be to put a thermometer into your mouth. It is my opinion that the psychrometer has the same rank in piano work and people who purchase pianos should have these facts made known to them.□

CHIPS OFF THE OLD BLOCH

JOHN BLOCH

(Technical Editor's note: The following article is presented with some reluctance, on John's part and my own. It describes a procedure which may have value in isolated applications, but is by no means approved by me or the Guild; nor is it considered a substitute for a new soundboard. After much thought, we have decided to present it anyway, knowing it will be controversial but confident that its application will be cautiously and judiciously considered by our readers. — J. K.)

In 1967, Charles Smith sent me nine soundboard springs (the spring on the right is one of them in **Photo #1**) and the bearing micrometers (**Photo #2**). **Photo #3** shows how Smith used the treble micrometer and his soundboard spring. **Photo #4** shows how he used the bass micrometer.

The point of the treble micrometer is placed between the bridge pins with the short end of the gauge to the hitch pin end. In this position, the micrometer is run down until the point touches the wire on the hitch pin side of the bridge. This gives a reading of one inch of hitch pin wire.

When setting up the gauge on a straightedge, be sure the capstans are adjusted so the gauge reads zero at .200" before using it. Therefore, if a reading of .208" were taken, the bearing would be .008". This setting procedure is used in setting up the bass micrometer, too. Even though we have a bass micrometer, we do not place the soundboard springs under the bass bridge. The bass micrometer is read as shown in **Photo #4**. Numbers 1 and 2 are the capstans; 3 touches core wire; 4 does not touch in the top picture. The bottom picture shows 3 and 4 touching core wire as shown. The difference of reading of the micrometer is the bearing reading of one inch of hitch pin wire.

Another way to put it is that the reading of the micrometer gives a measure of drop below the bridge top for 1" length segments of the string between the bridge top and hitch pin or bearing bar near the hitch pin. To get the full bearing, the gauge reading in thousandths of an inch is multiplied by length in inches of hitch pin.

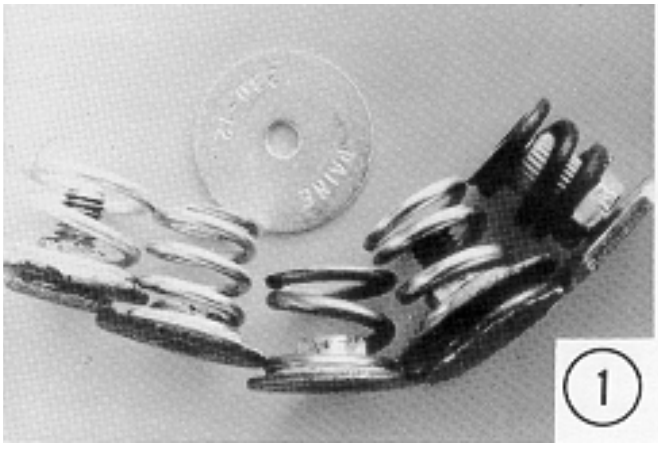
Photo #3 shows the springs placed between the back post and the soundboard under the bridge (no ribs are used). Using a wide washer helps to avoid crushing the soundboard. In "J", a block is glued and screwed to the back post, perhaps because there was not enough room for the spring assembly on the post. In places where the back posts are not available for use, a heavy piece of wood can be placed from back post to back post following the long bridge to support the spring assembly. This heavy piece of wood could go between the back posts (between soundboard button 3 and 4 down to soundboard button on the back posts between 5 and 6). It may need a block added on, as in Photo #3, "J".

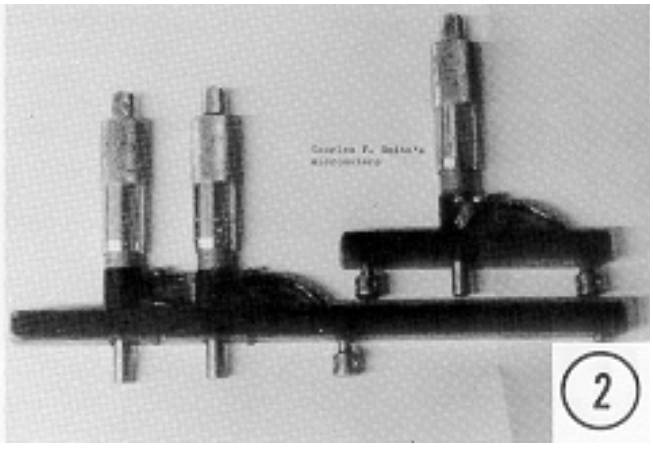
Three spring assemblies placed about 10" to 12" apart can lift the bridge so that your reading with the micrometer is .020" to .025", which Mr. Smith claims gives (produces) greater activity of the soundboard.

The following is quoted from Mr. Smith's article —

It is suggested that technicians test many pianos and observe the quality and volume. Only one piano in about 300 had a uniform reading, which was .020. It had a well-balanced tone and good quality.

New piano readings (from top treble toward the bass). Treble:





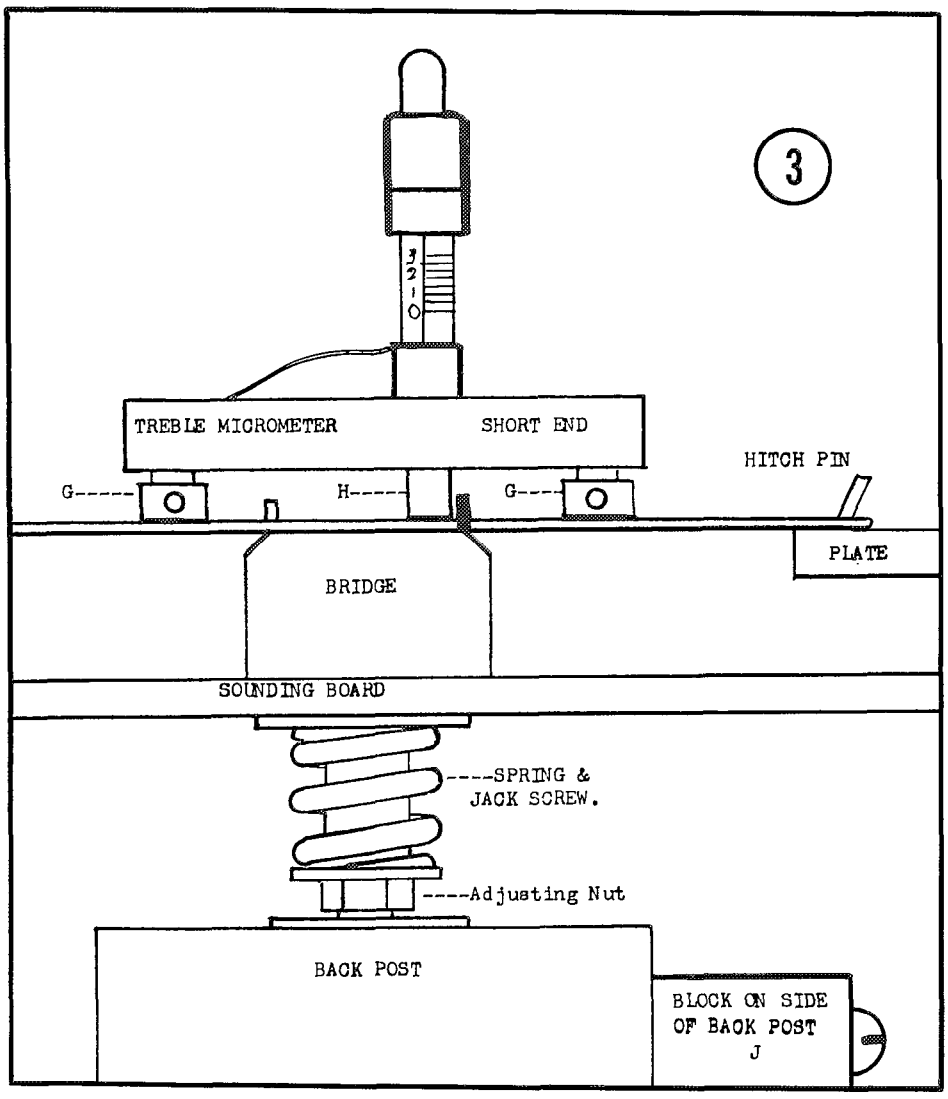
.045 — .040 — .030 — .015 — .008 — .008. Bass readings: .040 — .040 — .040.

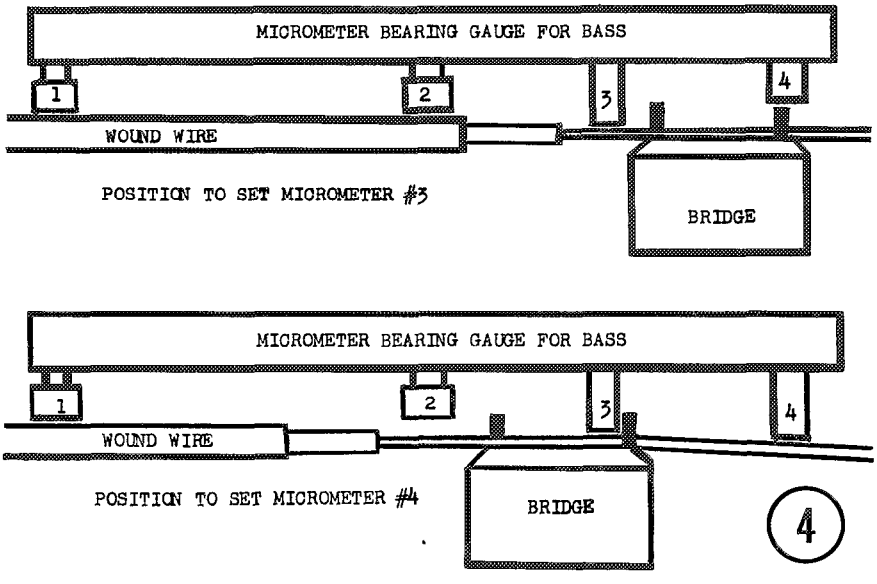
Rebuilt pianos (the next readings were done after a very extensive rebuilding, including soundboard, shims and restoring bearings. This piano was about 40 years old.). Treble: .019 — .017 — .017 — .012 — .015 — .002 — .002 — .018. Bass: .027 — .021 — .021.

The following are the readings of a six-foot piano made in 1910. Treble: .032 — .027 — .020 — .012 — .006 — .002 — .002 — .010. Bass: .020 — .031 — .017.

With four springs. Treble: .030 — .027 — .020 — .017 — .017 — .017 — .018. Bass: .035 — .043 — .020.

The writer has made tests as high as .025 through the middle of the treble bridge with no disadvantage showing. Adjusting bolts and micrometer gauge, the bearing can be adjusted at any time in the future. If strings are removed, it will not be necessary to remove strings, as the raise will not be enough to affect the board during rebuilding. When a soundboard has no cracks, there will be no need to shim during rebuilding or extensive restringing.





Today we use the dial bearing gauge (**Photo #5**) and use the four springs (**Photo #1**), one through four, left to right. These soundboard springs are assembled by Lou Day of our Denver Chapter. We read not only the back bearing (hp), but the front bearing (sl) of the bridges. (See the July 1979 Journal, page 12, for an article on downbearing.)

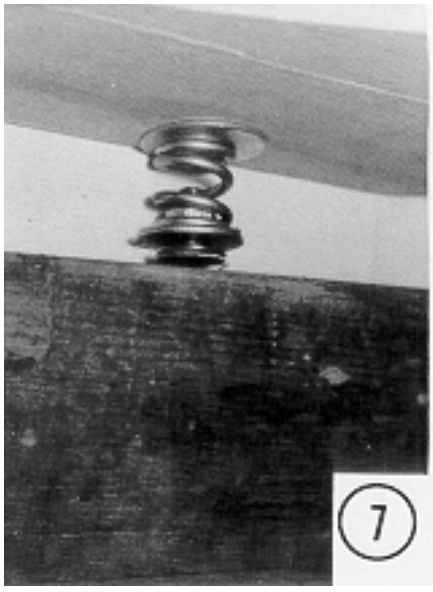
Take readings in each section before adding the soundboard springs like Mr. Smith did, but use our dial bearing gauge. Read both the speaking length of the bridge (sl) and the hitch pin length of the bridge (hp).

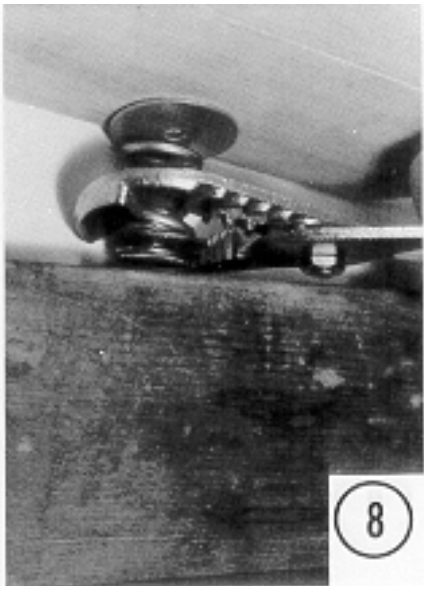
Now we start raising the soundboard with the springs. Read both sides of the bridge and listen to the tone. In **Photo #6**, we see a studio piano that had gone to a flat crown. We used channel iron cut into three sections to follow right under the long bridge. Put nine springs in between the channel iron and the soundboard. We pushed up the bearing quite a bit on the hitch pin length of the string. The piano really went sharp. We were quite worried. We lowered the pitch and left it for the night. The next day we lowered the pitch again, but higher bearing readings remained on the hitch pin side of the bridge. We gave up for a couple of days.

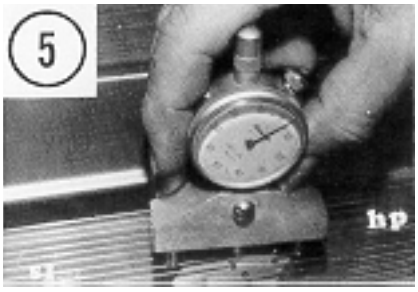
When we came back to it, we found that the soundboard had crowned again. The bearing points were higher on the speaking length than the hitch pin length. We fine-tuned the piano and the telephone has not rung yet.

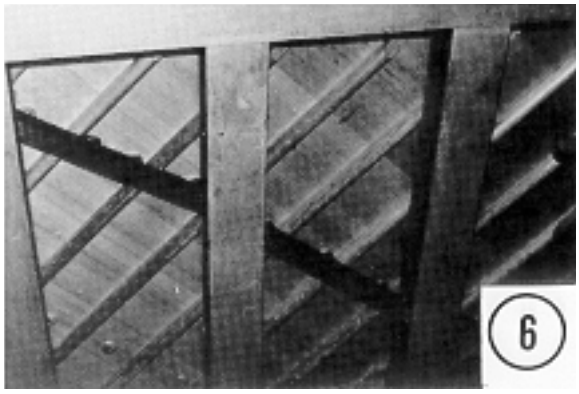
The soundboard springs idea has been misused in our area quite a bit. The other day I went out to tune a restored (?) 6-foot-plus grand. It had some kind of soundboard spring under it and the tone would not last long enough to tune any fifth or fourth intervals. The springs were not placed properly under the long bridge and the springs had no big washers so they were gouging the soundboard. But, the bearing readings were not too bad. This customer is now scared to trust any piano technician to fix the piano.

Photo #7 shows Lou Day's soundboard spring being used under the long bridge, up against the soundboard. **Photo #8** shows channel lock pliers used to push up bearing on the long bridge. Excess pressure tends to destroy the elasticity of the soundboard and this means rapid tone deterioration. It is easy to see that if pressure is not accurately graded, an excess in one place may mean total absence of pressure at another, and consequent irregularity of tone. If total load on the soundboard is too great, the board may be so rigid it cannot respond well to the small energy given to the string by the hammer. □









Learning Procedures For Tuning Equal Temperament

Robert W. Erlandson

I have spent six years of my tuning career in fulltime instruction of piano technology. Because I taught people for whom it was a first experience, I could mold them slowly and firmly into a thought process and indoctrinate them with my methods of tuning and setting of temperaments. I feel I need not worry about these people, because any information they pick up and apply that does not work for them will be set aside, and they will continue with an established pattern of tuning and setting temperaments.

I left fulltime teaching in 1974, to go back into business as a self-employed technician. Since then, I have had an opportunity to observe other technicians at work who had to learn their art the hard way, with little supervision and long lapses of time between small elements of supervision and instruction.

I am amazed at how well they achieve their work with these handicaps. It is for the benefit of these people that I am writing this column, but for those of you who have passed on information and instructed these people, I hope you don't take offense to what I say, as your services are also needed. Now that I have captured the interest of all factions, let us proceed.

The two years that I acted as tuning tutor at the national conventions, I have observed that there are people who sign up for lessons year after year in search for that one formula which would allow them to tune pianos with some kind of magic that they think they observe while watching others tune. Each time they take a lesson they try to either latch on to or have the instructor impose upon them his or her method of setting a temperament. I may also be guilty of this to some degree, but am aware of it and want to call it to others' attention. These people, after an hour of indoctrination, take these whole temperaments home with them, work on them diligently, learn them and memorize them from the printed page (in most cases, one page), but their work does not improve all that much, and their level of frustration has been raised instead of lowered. The highly-skilled tuner-technician uses (whatever theme it may be) a temperament because of many thought processes that the technician cannot apply to paper or convey in a 2-hour lecture, or in a single lesson. I am willing to try different methods of setting a temperament, but to make it work for me to its best advantage, I must know the thought process that makes it of valid use to me. Those who have become frustrated with their results must back up and develop a thought process and establish a valid way to pattern their work.

I have outlined a pattern by which you can learn to tune a piano the way the scaling dictates to you, which is the way I feel that the piano should be tuned. I don't intend to impose upon you any particular temperament theme, as there are many. I am giving you a skeleton to work with, and you can fill in with any theme that you wish, although I may have an influence on your method of using it. This pattern must be blocked out in units of learning which you must practice and not continue to the next step until the previous step is mastered. There is a time of readiness to learn the next element regardless of your hunger to know its entirety in one big gulp. You cannot eat a whole meal in one big mouthful, nor can you digest it unless you have some teeth to chew it with. I hope that this will provide you with some teeth to digest all of the material that has been printed and conveyed to you.

You must be able to tune unisons with some degree of accuracy before you can proceed with any of these steps, as you have to have a masterful control of rapidly changing beat rates. We will work with and discuss an area of the piano and a starting point where hearing is most efficient.

I would like to define some terms and structured learning processes before outlining the learning procedure.

I. *Equalizing* — Learning to identify equal beat rates. You cannot compare unlikes with accuracy unless you can identify accurately the equals.

II. *Tamperament* (new term?) — Moving intervals a "guesstimated" amount in a direction of equal temperament, making them useful in setting a temperament.

III. *Equal temperament* — Moving the intervals a very accurately measured amount to coincide with their mathematical frequency ratio. Don't panic, I don't know any more math than you do, I just had to make it sound impressive.

UNIT I

To develop the skill of equalizing beat rates.

LEARNING PRACTICE ONLY

Must be practiced until you can rapidly achieve the desired result. Do not move to the next unit of practice until you can achieve this one accurately. Your thought process will develop as you proceed.

Step I

Take two expanded Major Thirds having one common note. As an example, F33 to A37 to C#41. A37 being the common note of the two intervals, expand A37 from F33 a perceptible beat rate, and also expand C#41 from A37 the same perceptible amount.

Step II

Now, by moving the common note sharp very slightly, observe the effect on the two intervals. Then move it to the flat side, and again listen to the two intervals for the measurement of the effect.

Practice and master. Manipulate the common note of the two expanded Major Thirds to make them of equal beat rate. You should not continue to the next step until you can reduce your moves to a consistent number of three or less moves of the common note per each successful correction.

Step III

Alter one outside note (33 or 41) to change the beat rate, and again equalize by use of the common note (A37). You should do this with many different beat rates so that you can expand your perception of a wide, wide range of beat rates.

Step IV

Practice the same exercise with contracted intervals (Example — Minor Thirds F33 to common note A flat 36 to B39.) which will have a mirror-image effect on expanded intervals.

By practicing this unit you will develop a thought process by which you can expect a conditioned result when correcting two or more intervals by making one single move in the right direction. This should develop the thought process of listening to the two like-intervals with a common note, as listening to, comparing the two, thinking of the direction of altering to correct, preconceiving the expected result, acting (tuning) and successful results. In much of my observations, I have seen the wrong thought process — if you can call it a thought process — as follows: *Listen. Something is wrong. Tune. Listen. Oops, it's worse. Went the wrong way, better go back.*

Now that the thought process is developing, you can correct errors in tuning, if a piano is nearly in tune, by checking all of the like intervals surrounding a suspected out-of-tune note by making it the note in common to those intervals.

UNIT II

FURTHER DEVELOP SKILL OF EQUALIZING BEAT RATES

LEARNING PRACTICE ONLY

EXPAND THOUGHT PROCESS

DO NOT CONTINUE UNTIL TECHNIQUE IS MASTERED

NOTES TO WORK WITH — F33 A37 C#41 F45

Step I

Begin with a tuned octave F33 to F45. Tune an expanded Major Third, F33-A37, by manipulating A37 to a beat rate giving a tremolo effect. Now do the same with C#41 and equalize the two Major Thirds common to C#41. Go back to A37 and equalize the two Major Thirds common to it. Repeat this process until all three Major Thirds are of equal beat rate within that octave. Practice until you can repeat with a high degree of accuracy in a minimum number of moves of the A37 and C#41 only. I'm not going to tell you how many moves you should make, because with practice you may do it much more quickly than I.

Now that you are able to make all three Major Thirds within that octave equal, please observe one thing. Notice that the middle Major Third is the exact center of that octave. Its beat rate has to be as exact as you can possibly make it without having to know what it should be. Now you begin to tamper with the two outside Major Thirds. According to beat rate charts, there is a difference of approximately two beats per second in those three Major Thirds, the bottom Third being the slower of the three. By altering the F33 to reduce the lower Major Third compared to the second Major Third by two beats per second, you have destroyed your octave to F45. By correcting the octave by tuning the F45, you should add to the upper Major Third very closely an equal amount that you took away from the lower Major Third. Now you should have a very perceptible equal progression of beat rates in those three Major Thirds.

After you have developed some degree of accuracy with your tampering, you can proceed to a more accurate degree of tempering. You may have read the following in previous journals written by other people, but I will repeat it. The lower Major Third of the two connected Major Thirds *should beat four beats in the same given amount of time that the upper connected Major Third gives five beats.* If you are not inclined to good rhythm, your imagination might become quite overpowering to the actual happening. After you have tampered or tempered these three Major Thirds within the octave, you can expand outside your confined octave one or more Major Thirds either way. With these established notes, you are now confined to filling in the blanks with your desired method. This should confine your other intervals so that when you cross-check them with these established notes, you should be blocked into a consistently accurate, acceptably tempered scale.

Whether you build your temperament theme on Fourths and Fifths or Major Thirds and Major Sixths, I feel that it is advisable to choose to use one or the other, and not mix fast intervals with slow intervals while tuning. Make corrections with the others while checking. Especially when you are developing your skills, if you alternate between the two types of intervals, you are constantly shifting gears in your mind. The same is true for beginning with your building blocks and working in one direction or the other rather than from the center and radiating out while setting the temperament within the octave. As I see it, if you radiate from the center, the beat

rates become so contrasting that the mind cannot cope with the extreme differences.

One more thing to complete my thoughts with this unit. Let's take a confined segment of the temperament and make an example of one of the building blocks. I will discuss Major Thirds and Major Sixths. With this pattern of established notes set up by the connected Major Thirds, you should not be able to tune another interval without an immediate valid check available to confirm your efforts. Beginning with the Major Sixth F33-D42, tune the D42 and expand it approximately 1 Hz. more than Major Third F33-A37, and if it moves too much, you made too much contrast between the comparison of the Thirds and Sixths. After you are satisfied with your compromises, tune the Major Third down from D47, which is B flat 38. You have an immediate check against the F33, which is a Fourth down and F45 a Fifth above. You also have an adjacent Major Third A37-C#41 as a comparison. Now tune the G flat 34 to the B flat 38, a Major Third, and check the Fifth up and Fourth down if you have expanded your connected Major Third outside of your working octave. Again, if you are satisfied with your compromises, you are ready to proceed with the next cycle of tuning the D#43 to the previous note.

You have now finished tuning about ⅓ of your temperament octave. If you watch, around each note that you tune you should see an abundance of pre-tuned notes providing valid checks to determine your accuracy. This will get you a good "in the ball park" temperament. Don't expect to take just any theme and set a finished temperament unless you like the challenge of it. If you expect to have 100% success with that kind of challenge, you may go mad.

After you have successfully set an "in the ball park" temperament, you can proceed to refine it; but if you cannot decide which note to move and which way, you might as well forget it and be satisfied with your work up to this point and tune out an octave in each direction from the temperament. This will provide you with more possible checks. If you try Fourths each side of the common note, and Fifths each side, and Major Thirds each side, and more than one of the checks indicate a move in one direction will improve them without damaging the others, then your check becomes quite valid. Even if one check requires a directional correction, do it and check the other intervals on either side of that common note so as not to damage them. This will add refinement to your temperament and to the rest of your tuning. The more that you extend your temperament tuning from a confined octave, the easier it will become to verify and correct minute errors. You must do your extending of your temperament in small increments as you learn and establish your pattern. If you continue to look for them, you will see more and more checks as you mature as a fine tuner. □

Ring the Bell

Everyone wants a chance to receive the prestigious President's Club award or to sport a Bell Ringers or a Restorers Club ribbon at the annual convention. To insure that every Bell Ringer point is credited to your "account," and that every Restorer of a former member is recognized, the Membership Department requests the following:

1. Please PRINT your name after your signature on the line "recommended by" when you wish to receive credit for bringing a new member into the Guild. Some signatures are difficult to read and we regret having to omit a name for this reason.

2. Please show your own chapter after your name. Some members sponsor a new member into a chapter other than their own.

3. If you wish credit for a RESTORED MEMBER, please write this fact on the application form. It is not always possible to trace a former member after a lapse of time.

4. If corrections should be needed in the records, please notify the Home Office promptly, as The Journal goes to print some weeks ahead of receipt.

The following points are scored for signing up the various ratings:

Craftsman — six points. Apprentice — five points. Allied Tradesman — four points. Associate — three points. Affiliate — two points. Student — one point.

When you have a total of 24 points you become a member of the President's Club; all others are Bell Ringers.

Sponsor a new member and win points in the Bell Ringers Club. Join the celebration at the 1980 convention in Philadelphia.

BELL RINGERS!

The last date for recording new members for points in the BELL RINGERS, RESTORERS, and PRESIDENT'S CLUB will be June 30th this year. Please be sure to notify the Home Office of all new and restored members by that date, so that everyone will receive full credit at the convention.

New members recorded in July will be credited to the 1980 Booster Club.

President's Club

DRAINE Robert 28
LILLICO, John 70

Restorers Club

BITTINGER, Dick
HAWKINS, Marshall
KERBER, Walter
MANWILLER, Ralph
SCHEER, Bob

Bell Ringers Club	Points
ABBOTT, William Jr.	6
ACH, Philip	3
ACKMAN, Harold W.	6
BAIRD, John	18
BAKER, Dean	6
BALIGIAN, Agnooni	16
BARRETT, Bruce	1
BARRUS, Ralph	6
BERRY, Ronald	5
BIBLE, Dana	1
BITTINGER, Dick	21
BLAND, Robert R.	6
BLANTON, Tom	6
BROOKSHIRE, Jerry	3
BROWn, Walter	1
CALLAHAN, John C.	6
CATE, Allan	2
CAUETTE, Louis	5
CAUNTER, Gerry	14
CLARK, Peter M.	1
CLOPTON, John	8
COLEMAN, Jim, Jr.	2
COX, Merrill	2
CROY, Ronald	12
DANIEL, Pat	6
DANTE, Richard	6
DOERFLER, Richard	1
DONELSON, James H.	1
DROST, Michael	18
DRAINE, Robert	23
EDWARDS, William E.	3
ERBSMEHL, Charles	1
ERLANDSON, Robert W.	6
FAIRCHILD, Steven	1
FISHER, Allen	6
FISHER, Leroy	6
FRANZ, Dennis L.	1
FRANZ, Earl M.	6
GERLER, Kenneth	1
GILLER, Evan	12
GOETSCH, Lawrence	12
GULLIXSON, Elisha	6
HANCOCK, William	6
HARMON, Clayton	7
HARRIS, Vaughn	6
HART, W. D.	6
HAWKINS, Marshall	6
HEINDSELMAN, Lois	17
HESS, James	9
HILBERT, Felton, Jr.	1
HOHF, Robert	6
JOHNS, Barney	1
JONES, Joel A.	5
KADWELL, Kenneth A.	6
KAST, Frank	10
KERBER, Walter	15
KINGSBURY, Richard	6
KLEIN, William N.	2
KOFORD, Lyn	5
KREITZ, Richard C.	5
LAMB, Elwyn D.	1
LEARY, Janet S.	1
LEWIS, Max E.	6
LICHT, Kenneth B.	6
LINDEMAN, Doug	23
MACCONAGHY, Henry	7
MACKINNON, Karl	1
MANWILLER, Ralph	6
MARCIANO, William	4
MARLING, Harold	5
MARTIN, Barbar	1
MATTHEWS, John	1
McANINCH, Daniel	1
MEEHAN, Joseph	18
MEHAFFEY, Francis	12
MEISSNER, Walter, Jr.	6
METZ, Albert J.	1
MOONAN, William	1
NICHOLSON, Steve	1
OLIVER, Stanley	1
OVENTROP, Edward	6
OWENS, Bruce	1
PEARLMAN, Sam	1
PERKINS, Robert	23
PETERS, George	12
PETERSON, Gerald	1
PHILLIPS, Webb	5
POTTER, Randal F.	5
PRATT, Orman D.	6
PREUITT, Ernest	11
REITER, Michael	6
REQUE, Styrk	1
RICHARDSON, James	11
RILEY, Martha	1
RODGERS, Thomas A.	6
ROE, Eugene	6
SANDERS, John	6
SEABERN, Paul	4
SCHEER, Bob	6
SCHMITT, Paul	1
SCHNEIDER, William	6
SCOTT, Dennis	1
SELLER, Marion	10
SERVISS, Kenneth	6
SEVERANCE, Davie	7
SHANK, Dean	5
SHELL, Roger	6
SHROYER, Al	1
SMITH, Arthur	1
SNELL, Marvin	1
SNYDER, Cecil	5
SNYDER, Willis	8
SORG, Herbert	6
SPEIR, Leon	6
STATON, Rocker	1
STONE, Sid	7
SWARTZ, Vern	1
TAPP, Kenneth	4
TAYLOR, Kendal	9
TITTLE, Martin	1
UPHAM, Russ	1
WAGNER, R. W.	16
WALKUP, Kenneth	16
WARMINGTOn, Carl	6
WEST, Richard E.	6
WHITTING, Ted	4
WICKSELL, Carl	1
WIGENT, Don	6
WILEY, John	5
WILLIAMS, Arthur	6
WILLIAMS, Robert V.	6
WILLIS, Aubrey	10
WILSON, Richard D.	1
WINTERS, Kenneth	8
WOODS, Edwin	5
ZEHME, Uwe	6

One Piano Technician's Approach to Profit

Daniel Dyer

(On September 10, 1979, the following address was presented to the New York Chapter by Daniel Dyer. With Dan's permission, we have edited it to include only the portion dealing with customer relations, which we think you will find interesting. — Jack Krefting, Technical Director)

"ONE PIANO TECHNICIAN'S APPROACH TO PROFIT"

As a senior citizen, I have had a successful business career in another field. Yet, piano work fascinates me. My address to the chapter is made with humility and gratitude. "Humility" because many technicians know so much more than I. "Gratitude" because the Guild has given me so very much training and fellowship.

The following are three appropriate business principles with numerous sub-topics and comments thereon:

COMMON SENSE IS ESSENTIAL!

A. Ethics Good ethics are good business. Character is what you are. Reputation is what people think you are. Ultimately your character determines your reputation. Be a good character by practicing good ethics.

B. Rip-offs. Many of us are aware that rip-offs are common in auto repair, TV repair, etc. "60 Minutes" had a TV program on auto repair rip-offs. Each one of us is responsible to keep any rip-off reputation away from the Guild. The best way, in my opinion, is to show customers the problems in a piano and explain the corrective procedures needed. For example, if let-off regulation is needed, let the customer see and hear a hammer block against the strings, or see and hear the hammer lose power by too early a let-off, or see the irregular let-offs of different keys. Piano customers, like hospital patients, usually appreciate an explanation.

C. Competition. Being gracious about a competitor usually reflects one's own self-confidence. It doesn't pay to knock a competitor. Sometimes, if you believe in a competitor's general ability, it even pays to apologize for your competitor's mistake: "He is a good technician," you might say, "But we all make mistakes. This mistake happened to you."

D. Consultants. If you can't solve a customer's problem, consider using a consultant, much like consulting a doctor or specialist. Early in my piano career, I was called in to find a foreign sound, which the previous technician said was a sympathetic vibration in the room. I knew differently, but couldn't locate the problem in the piano. So, I called another technician-friend. After one hour of testing and disassembling the piano, we located the offending loose screw on the underside of the damper lift rail. When I told the customer I would pay the consultant, because I had learned something, she was more than appreciative. She was a persuasive advertisement of my determination and resourcefulness on her behalf.

E. Taxes. All of us should know the difference between tax avoidance and tax evasion; the first is legal, while the second is illegal. If a customer suggests paying me cash, but not paying for the New York sales tax, I say, "Thank you, but no. Income taxes and sales taxes are laws. Also, if I would cheat the government, you might properly think I would cheat you."

F. State sales tax exemptions. I'm not a lawyer, but I have the following businessman's understanding. Obviously we must report the income, but apparently we do not have to pay New York sales taxes for:

(1) Appraisals.
(2) Out-of-state deliveries (sellers must pay for trucking).
(3) Commissions earned on sales of customers' pianos.
(4) Diplomats (get their official exemption number).
(5) Registered Institutions; i.e., churches, schools, public libraries, homes for the elderly (get exemption number).

H. Systemize operations. (1) Keep a 5x3 index card for each customer and piano. Include the customer's name, address, telephone number, who plays, type of piano, work performed and when, etc. For example, "Replaced 6F ivory head." This avoids the customer's later complaint when the 5G ivory head comes off that, "The same ivory came off again." You can show your card to the customer.

(2.) Tickler-file cards are essential — that is, 12 index cards, one for each month. Then, "Like the dentist," I say, "I'll try to call you

every six months." Some customers prefer to be called every year, others prefer every six months or three months, and some call me when they hear something apparently unsatisfactory. This call-cycle information is noted on the customer's card in my file. After a tuning, I note on the tickler card the appropriate future the month when the customer wants to be called.

(3) Single-entry bookkeeping is all you really need. I keep a daily list of expenses, daily list of income, and monthly and cumulative profit and loss statement.

(4) As for receivables, I keep the customer's cards in a special clip until I'm paid. Then I mark "paid" thereon, and return the card to my file.

(5) A list of piano teachers is helpful. Customers frequently ask for recommendations for teachers. I also call teachers when I have pianos to buy or sell; such information helps them with their customers, too.

(6) Lists of prospective buyers and sellers of pianos are also useful. I even include institutions looking for gifts of pianos.

I. Encourage early payments by your customers. Frequently I'll say, "Do you want to save 15¢ postage and the trouble of addressing and mailing by paying me now, or do you prefer to mail me your check later?" If an invoice is needed, save time and postage by leaving it at the customer's home. If you must mail an invoice, do it immediately each night. Getting money regularly 30 days earlier equals about 1% per month at 12% per annum, for example. On yearly sales of $20,000, each 30 days means about $200 of interest earned or lost. If collections are delayed for 90 days or more, it amounts to a lot of money these days.

J. Keep in touch with your customers. (1) Telephone your customers during the appropriate month, to remind them that time has passed and the piano probably should be tuned, based on your tickler-file system.

(2) You can properly appear delighted when the customer says the piano doesn't need tuning by saying, "Gee, that must have been an extra good tuning I gave you." Then ask the customer when another reminder would be appropriate because they may:

(i) be going away on vacation or the piano player is off to college; (ii) have a financing problem (If a customer's bread winner is out of a job, one free tuning is a great advertisement.); (iii) having the piano room painted or new carpeting being installed, all of which may or may not really be musically important but it seems important to the customer; (iv) be moving (This may mean a piano is for sale, or rent, or you can recommend an out-of-town Guild tuner.).

(3) If a customer receives a timely reminder, but still postpones the tuning, when she "hears" the piano out of tune, she recalls the telephone call and knows the tuning is overdue. Without the reminder, customers may think "the piano was just tuned, and now it's out of tune, so the tuner did a poor job."

(4) Special jobs can be developed. A customer said, "Son Charles says the piano tuning is still good, but he is having difficulty with his 32nd notes. Perhaps he's too young!" Answer: "It might be that the piano needs regulation particularly repetition levers and back checks. Pianos should be regulated roughly every two years."

K. Business building questions. (1) Occasionally ask your customer, "Do you know anyone wanting to buy or sell his piano?" Then explain your list of potential buyers and sellers, and your commission for producing an ultimate buyer or seller.

(2) "Are any of your neighbors unhappy with their pianos, the tunings or tuners?"

(3) "Do you ever have guests who are real good pianists? If so, several things can be done to improve the performance and tone of this piano." Then describe the problems and corrective procedures saying, "Let me know." About 25 percent of customers want the job done.

L. Diagnose a general problem from a specific complaint. When you see a specific complaint-problem, ask yourself not just "How do I fix it?", but "Why did it happen?" This can lead to another, preventative job. For example:

(1) If one or two jack-tails are broken, probably all let-offs need regulation. Or if the piano is very old, the jack-tail glue may be disintegrating and require separation and regluing all jack tails.

(2) If one or two hammers bobble, one or more regulations on the entire piano are probably needed.

TIME IS MONEY!

A. Cost accounting. Keep cards on time spent to do various jobs, particularly when reconditioning pianos. The simplest job probably takes 15 minutes. For example, just getting out tools or materials, doing the job, and replacing the tools — if you figure your time at $20.00 per hour — ¼ hour is $5.00.

B. Isolate the problem. If it is a "sticking key," check to determine the general location of the problem; that is, the hammer, whippen or key. For example:

(a) Raise several grand hammer, let fall and observe.

(b) Raise keys to up-stop rail, let fall and observe.

(c) If these tests are okay, the problem is in the whippen.

PLEASE THE CUSTOMER!

A. Tune each piano as well as possible. The cheapest advertisement is a satisfied customer.

B. A minimum charge for a special repair. Generally I charge a minimum for a special call. However, if it is a frequent, nearby customer and the problem is simple, after completing the job I may charge only ⅔ of that amount and customer "saves" money.

C. Explain the piano's problem and your charge before doing repairs. For example, show the customer the cuts in hammer felt

from wear, explain tonal results from filing and shaping old hammers or installing new hammers.

D. Explain tools and techniques. Some customers may be curious while others may be skeptical and fear a "rip-off."

F. Return items of value found in pianos. Your "lucky" coins, pens, pencils, toys should be returned to the customer.

G. Refund or credit overpayments. Always telephone; it impresses customers with your integrity.

H. Firm prices, not estimates, seem preferable. Customers are often annoyed when any serviceman charges more than originally estimated. So put in a safety cost figure for contingencies, but stick to your original price quotation. (Or charge less if you want a free advertisement.)

I. Voicing requires the customer's presence. Pleasing sounds can be a personal preference; some like brilliant, some like mellow tones. Ask what the customer likes, despite your own preferences.

J. Call your customers to thank them for recommendations. They are human; they appreciate it!

K. "Don't Apologize, Lady!" Sometimes I've answered customers who appear ashamed of a neglected or abused piano with, "I like the challenge of working on old broken pianos, although sometimes it may not be worth it to you if they are too old, too abused or too inferior."

L. Sometimes leave a note with your bill. "You weren't here when I discovered the following minor problems needing repair. I did the necessary without your approval. I acted as it it were my own piano. My charge would have been an extra $10. It is your option not to pay it, if you are not satisfied." Nobody has refused to pay me yet!

M. Educate, educate, educate! Most customers are willing to pay if they understand the problem, what happens if the old problem remains uncorrected, how you propose to correct the problem and what it will cost.

(1) Concert pianist is no exception. A foreign pianist complained just before giving a concert that 6E on a beautiful Steinway grand was ringing. I was called at home. All that was needed was to explain that the dampers stopped at 6E, and she had probably been practicing on a piano with a damper on 6E. Correct! The concert was delightful and the pianist was pleased!!

(2) Customers with professional guests need education. After I had initiated a tuning after a six-month interval, the customer told me that a famous pianist was to be a guest and play the next night. I shocked the customer when I explained that concert pianos are tuned before every performance and the best compliment for the hostess was to say, "I had the piano tuned for you just yesterday!" □

"WELCOME TO WHERE IT ALL BEGAN"

Our invitation to friends and technicians of the Guild is becoming a difficult task, as all the advantages of this convention put in writing would fill a book. Perhaps a personal experience at this time would be appropriate. Years ago, before I started attending conventions, my train of thought was always:

1—Loss of a week's pay.
2—Expenses involved in attending a convention.

After attending conventions for the past 16 years, my thoughts have changed:

1—A vacation period (a rest from a thriving business).
2—Endless knowledge obtained in the piano technology field.

This brings to mind the story I tell my friends and customers. At home in my area, I have developed a fine reputation as a piano technician and can be compared to the best of them here. Then I go to a convention; what a turnabout. I feel like a novice in kindergarten flitting from class to class.

The other fact that has been proved in my experience is that in spite of the expenses involved in attending the conventions, my income has increased each year. I feel that is due to the knowledge I obtained in attending classes. When I started in the tuning field, gaining information from tuners was like a quiz program without answers. Today I am most grateful to all the friends and technicians whom I have met through the Guild.

Did you know that one of our first conventions was held here in Philadelphia in 1957?? And it was held at the Benjamin Franklin Hotel.

So, back to our theme,

WELCOME TO WHERE IT ALL BEGAN

Please Plan Ahead

Walt Sierota

Walt Sierota, Local Host Chairman

Come to the "City of Brotherly Love"
for the
23rd Annual Piano Technicians Guild Convention & Technical Institute
July 14 – 18
The Benjamin Franklin Hotel — Philadelphia, Pennsylvania

Piano Technicians Guild

July 14-18, 1980
23rd Annual Convention and Technical Institute

Philadelphia, Pennsylvania

WHERE IT ALL BEGAN!

Attending a Piano Technician Guild Annual Convention isn't all classwork; you can relax with your friends (old and new) and enjoy the many activities planned for you.

EXHIBITS:

This year, arrangements have been made for over 30 exhibits by many of the industry's top companies. It will be your opportunity to discuss ideas, problems and possible solutions with the very people most likely to know — the service representatives and company officers of piano manufacturers, supply companies, importers, trade schools, electronic tuning equipment firms and others. This year the exhibit will be located in a much more convenient area off the main lobby of the Ben Franklin Hotel.

BANQUET:

Each year the banquet serves as the convention's social highlight. The entertainment planned promises you a wonderful evening! You will be pleased to know that the banquet is being returned to our usual Wednesday evening and will be held in the glamorous Georgian designed "Crystal Ballroom". The spaciousness affords us adequate room for the reception and banquet, which will allow us to have the largest banquet the Guild has ever held.

SPECIAL FEATURES:

Plans have been finalized to add a special feature, "THE BLOCK PARTY" to be held in the Crystal Ballroom, Thursday evening. This event will create the atmosphere of a street carnival complete with booths, games, entertainment, clowns, street musicians, etc.

In addition, there will be a "Flea Market", allowing Technicians and Auxiliary to display their skills and unique items for sale. More details to follow regarding this exciting event. Note: This evening will be kicked off by an enticing "hors d'oeuvre" party to be held in the same Ballroom.

CLOSING LUNCHEON:

At the closing luncheon you'll bid farewell to retiring Guild officers and welcome their replacements, share in award presentations and say goodbye to friends for another year. This is a "must-attend" event that's guaranteed to make you glad you came to "WHERE IT ALL BEGAN!"

Be an "Early Bird" by completing and mailing to the Convention Registration Form to the Home Office.

BENJAMIN FRANKLIN HOTEL

"Blessed is he that expects nothing for he shall never be disappointed." — Benjamin Franklin, 1737

Conveniently centered in the heart of downtown Philadelphia activity, the Benjamin Franklin Hotel is but a short walk from our country's most revered historic shrines: Independence Hall, Carpenters' Hall, Christ Church, Betsy Ross House, Old Custom House, First Bank of the U.S., Elfreth's Alley, and many other reminders of our revolutionary past, including renowned Society Hill and its restored Colonial homes.

BE A WINNER!

"A penny saved is a penny earned." — Benjamin Franklin, 1740.

Register early (by May 15th) and be a winner! There will be two free dinners at the Benjamin Franklin Hotel awarded during the Opening Assembly, $100 awarded at the Closing Luncheon, and four nights lodging given at the Wednesday Evening Banquet. (Winner of the free lodging must be staying at the Benjamin Franklin and must be present at the Wednesday Evening Banquet.) One drawing ticket will be given with your deposit when you register early (May 15th).

REGISTRATION CANCELLATION POLICY

"Well done is better than well said." — Benjamin Franklin, 1738.

Full registration will be refunded if cancellation is received postmarked no later than June 10th. After this date, a 30 percent cancellation fee will apply to all refunds made prior to July 10, 1980. There will be no refund made on any registration cancelled on or after July 10.

CONVENTION $30 CERTIFICATE

Nonmember technicians attending the new convention may obtain a special NEW MEMBER CERTIFICATE valued at $30.00 which may be used to cover the full new member application fee payable to the local chapter when accepted as a Guild Technician before December 31, 1980.

Nonmember spouses may use $6 of the registration fee as Auxiliary dues at the convention.

1980 Technical Institute

New Classes

Sharpening the Tools of the Trade — a "hands-on" class with Priscilla and Joel Rappaport

Aftertouch in Grand and Vertical Pianos – with the "Yamaha Team" of LaRoy Edwards, Jack Caskey and Kenzo Utsunomiya

Grand Dampers — a "hands-on" class with Cliff Geers and Willard Sims

Tuning Techniques — with Ben McKlveen

Rebushing Workshop — a "hands-on" class with Evan Giller

Lubricating — When, Where and How — with John Ford

Grand Regulation — a "hands-on" class with models and tools presented by Roger Weisensteiner and his team

Grand Hammer Installation — another "hands-on" class with Willard Snyder, Homer Wagman and David Snyder

Selling the Job and Yourself — with Robert Wagner

Electronic Instrument Overview — with Kathryn Nickerson

Special Tools for Piano Technicians — a class oriented toward the visually impaired, presented by Paul and Jack Sprinkle

Piano Hammer Construction and Preparation — presented by Bob Johansen and Ray Negron

Inharmonicity — What It Is and How to Deal With It — presented by Dr. Albert Sanderson

Hazards of Piano Tuning — a lecture class presented by Walter Pearson

Servicing Harpsichords — with Bill Garlick

Repeat Classes

The Behavior of Strings — after a long absence at conventions, with Jim Hayes

Servicing Teflon Bushings — a "hands-on" class with Fred Drasche

Aural and Visual Tuning — with George Defebaugh and Jim Coleman

Voicing and Tone Regulating — with Norman Neblett

Vertical Servicing and Regulation — presented by Bob Hill, Bud Corey, Lou Herwig, Cliff Andersen and Larry Talbot

The Customer and You — income tax tips with Dick Flegle

Advanced Player Piano Repair and Servicing — with Norman Heischober

Servicing the Aeolian Player Piano — presented by Bob Snyder

Servicing the Rhodes Piano — with Harold Rhodes

Humidity Control Installation — presented by Allen Foote and Wendell Eaton

Special Classes

Complete Grand Rebuilding — this special class will be presented exclusively by Connecticut Chapter members Wally Brooks, Scott Welton, Chris Robinson and Frank Stopa

Pinblock Installation — with Jack Krefting, one day, six periods, repeated three times

Private Tutoring

There will be private aural and visual tutoring classes with the finest instructors possible — Newton Hunt, Carl Wicksell, Bud Willis, George Morgan and others.

MEMBER CALENDAR (Preliminary)

Saturday — July 12, 1980
1:30 pm- 6:00 pm Registration Open

Sunday — July 13, 1980
10:00 am-12:00 n Council in Session
12:00 n - 6:00 pm Registration Open
1:30 pm- 5:00 pm Council in Session

Monday — July 14, 1980
8:00 am- 9:45 am Chapter Workshop
8:00 am- Complete Institute Office Setup
8:00 am- 6:00 pm Registration
9:00 am- 4:00 pm Classroom Setups
10:00 am-12:00 n Council in Session
1:30 pm- 2:15 pm Regional Caucuses
2:15 pm- 5:00 pm Council in Session/Officer Elections
7:30 pm- 9:00 pm Opening Assembly
9:00 pm-10:30 pm Exhibit Opening/Ribbon Cutting

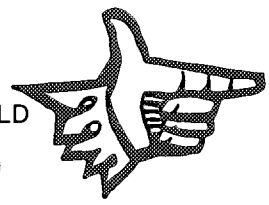
Tuesday — July 15, 1980
7:30 am-12:00 n Exhibits (Drawing)
7:30 am- Membership Services
8:00 am- 6:00 pm Registration Open
8:30 am-12:00 n Institute Classes in Session
9:00 am-10:30 am Board Committee Appointments
1:00 pm- 6:00 pm Exhibits (Drawing)
1:30 pm- 5:00 pm Institute Classes in Session
5:15 pm- 6:15 pm Feminine Technicians Meeting
6:30 pm- Young Technicians Meeting
Free Evening

Wednesday — July 16, 1980
7:30 am-12:00 n Exhibits (Drawing)
7:30 am- Membership Services
8:00 am- Registration All Day at Office
8:30 am-12:00 n Institute Classes in Session
1:00 pm- 6:00 pm Exhibits (Drawing)
1:30 pm- 5:00 pm Institute Classes in Session
6:45 pm- 7:30 pm No Host Cocktail/Reception
7:30 pm- 9:30 pm Banquet

Thursday — July 17, 1980
7:30 am-12:00 n Exhibits (Drawing)
7:30 am- Membership Services
8:00 am- Registration All Day at Office
8:30 am-12:00 n Institute Classes in Session
11:45 am- 1:30 pm Membership Services Open
1:00 pm- 6:00 pm Exhibits (Drawing)
1:30 pm- 5:00 pm Institute Classes in Session
7:00 pm- 9:00 pm Block Party — Flea Market

Friday — July 18, 1980
8:00 am- 9:00 am Committee Meeting
7:30 am-11.00 am Exhibit Finale (Drawing)
8:30 am-12:00 n Institute Classes in Session
12:30 pm- 2:00 pm Closing Luncheon

FILL OUT AND MAIL TO:
PIANO TECHNICIANS GUILD
113 Dexter Avenue North
Seattle, Washington 98109



MEMBER REGISTRATION COPY

Name _____

Home Address _____

City _____

State/Province _____ Zip _____

Nickname for Badge _____
(if not the same as above)

☐ Member ☐ Non-Member
☐ Visually Handicapped
☐ Will be staying at the Benjamin Franklin

Spouse's Name _____
(if attending)

Nickname for Badge _____
(if not the same as above)

Children (names and ages) _____

_____

REGISTRATION CUTOFF DATES
(Cutoff Dates are Firm and Absolute)
Check Boxes and Total

TECHNICIANS

Guild Members

Postmarked by June 1 ..... ☐ $ 80.00
Postmarked after June 1 ..... ☐ $100.00

Non-Guild Members

Postmarked by June 1 ..... ☐ $135.00
Postmarked after June 1 ..... ☐ $155.00

Private Tuning Tutoring (1½ Hours) ☐ $ 25.00
☐ Aural ☐ Visual

Grand Rebuilding ..... ☐ $ 25.00

Installing Grand Pin Blocks (1 Day) ☐ $ 5.00

SPOUSES AND CHILDREN

Auxiliary Member ..... ☐ $ 30.00
Non-Auxiliary Member ..... ☐ $ 40.00
Children (15 and under) ..... ☐ $ 5.00

OPTIONAL FUNCTIONS

Banquet ..... ☐ $ 17.50
Closing Luncheon ..... ☐ $ 12.50

TOTAL ENCLOSED $_____

Tickets for optional functions must be bought no later than 48 hours before the event.

NOTE: Spouses of Piano Technician Guild members and their sons or daughters, age 16 or over, may register for Institute classes at Piano Technicians Guild member rate. Guides of visually handicapped technicians may attend classes at no charge.

CUT CUT CUT CUT

HOME OFFICE REGISTRATION COPY

Name _____

Home Address _____

City _____

State/Province _____ Zip _____

Nickname for Badge _____
(if not the same as above)

☐ Member ☐ Non-Member
☐ Visually Handicapped
☐ Will be staying at the Benjamin Franklin

Spouse's Name _____
(if attending)

Nickname for Badge _____
(if not the same as above)

Children (names and ages) _____

_____

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(Cutoff Dates are Firm and Absolute)
Check Boxes and Total

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Closing Luncheon ..... ☐ $ 12.50

TOTAL ENCLOSED $_____

DO NOT WRITE HERE

Date Rec. _____ Priority No. _____

Amt. Pd. _____
Cash _____ Check _____ Money Order _____

Chapter No. _____ Member No. _____

Classification _____

FILL OUT AND MAIL TO:

PIANO TECHNICIANS GUILD
113 Dexter Avenue North
Seattle, Washington 98109

THE AUXILIARY EXCHANGE

Luellyn Preuitt

This month brings us our usual cheery message from **President Jewell.** She begins with some rather startling news—"Just heard this morning on the news (February 5, 1980) that the city of Philadelphia is broke. It is anticipated by June Mayor Green will have laid off many city employees. This should not affect our convention in July. In fact, we may help Philadelphia in a small way. I hope each of you have renewed your membership and are planning to attend the 23rd annual convention this summer.

"May I give you a brief preview of one of the three tours we plan to take this year — the mint. The Philadelphia mint is the largest coin factory in the world. Its floor covers an area as large as a football field. There is a glass-enclosed gallery above the foundry floor from which visitors may watch the process of coin making. Along the wall of the gallery are speakers with tape recordings narrating the process step by step.

"Three metals are used in making coins: copper, zinc, and copronickel ¾ copper and ¼ nickel). The metals are received at the mint in bars eighteen feet long, six inches thick and weighing three tons. After being heated to 1600 degrees Fahrenheit, they are "ironed" between heavy rollers until they are one-tenth of an inch thick.

"Coins are made in layers, a process called 'clodding', from the thin strip of metal. The coin cutter machines are like giant cookie cutters, stamping four coins at a stroke, making 100 strokes per minute. Forty tons of hydraulic pressure is used to make a penny, and one hundred tons to make a 50-cent piece. The machines can stamp out 300,000 pennies or dimes, 350,000 nickels, or 140,000 quarters every eight hours. Maximum capacity is 30 million coins a day. At the end of the line, the coins are automatically counted and sewed into bags, then placed in the mint vault. Mint vaults are said to be stronger and more secure than Fort Knox, and are not shown to the public.

"The walking tour begins and ends in the lobby of the mint, where there are displays of many coins and metals, Tiffany glass mosaics depicting coin making, and wall paintings unearthed in Pompeii in 1895, again showing the method of coin making.

"In the lobby you will also see Peter the spread-winged eagle. Peter flew into the mint one day during the 19th century and stayed to become the pet of the employees. He had access to the entire mint, and this was his undoing, for one day he became entangled in one of the machines and was severely wounded, dying a few days later. Peter appears on the silver dollar of 1839 and the flying eagle pennies of 1856-58.

"You can 'make-your-own-money' from a machine which stands in the lobby. For one dollar (maybe more by then, due to inflation), you can stamp out a coin with the mint building on one side and a map of the United States above the eagle Peter on the other. Wouldn't these make nice gifts to take home to the family — money you make yourself!

"Next month I will be giving you more about what we have planned as far as classes, crafts and other activities of the convention. Don't forget the spectacular Flea Market. With all my best to you." — Jewell

A MESSAGE FROM THE CONVENTION COORDINATOR

This month we bring you greetings from **Shirlie Felton**, Auxiliary convention coordinator. Shirlie's enthusiasm is apparent in what she says, and these are her words—"WELCOME TO WHERE IT ALL BEGAN. We of the Philadelphia Auxiliary, together with our dedicated President, Jewell, and other Pennsylvania Auxiliaries have been working diligently to make your visit to the 'City of Brotherly Love' interesting and enjoyable. Activities for your

pleasure during this 23rd annual convention, July 13-18, 1980, will include discussion groups, craft classes and walking tours. Our convention headquarters, the Benjamin Franklin Hotel, will provide a lovely setting for our annual tea and luncheon.

"Try to imagine life in the early colonial period of our country. What began in 1682 as the 'holy experiment' for Philadelphia's founder, William Penn, has become 'The Great American City', a city where the old and new blend.

"The Benjamin Franklin Hotel is located at Ninth and Chestnut streets, which is just two and a half blocks west of Independence Hall. Independence Hall has been referred to as America's most meaningful landmark. Here the Declaration of Independence was adopted on July 4, 1776. In addition, the Constitution of the United States was drafted and approved at this historical site in 1787. On Independence Mall, known as 'America's Most Historic Square Mile', we will visit the Liberty Bell Pavilion. The 2,080-pound bell continues to hang from the original yoke. This is one of the walking tours.

"Within one block of the Benjamin Franklin Hotel, another walking tour will include the Gallery at Market East. This is Philadelphia's newest shopping mall, which boasts of over one hundred stores on four levels beneath a glass roof. The Gallery's restaurants, large department stores and small, interesting shops are an ideal place to purchase a lovely scarf for Aunt Lily, a new tie for hubby, (who does such a great job keeping the world in tune), or indulge in a rich dessert. No need to worry about calories, since you will have ample opportunity to participate in the planned activities or explore Philadelphia on your own.

"The highlight of a third walking tour is the United States Mint, located at Fifth and Arch streets. Most of the coins made in the United States are made here. This is the largest of the three mints in the country. A museum in the Mint contains historical objects related to coin making.

"We want this Convention to be a happy experience for you. In the meantime, we can't decide which one of us will climb to the top of City Hall and stand shoulder to shoulder with William Penn to greet you as you 'Come To Where It All Began — WELCOME!' " — Shirlie Felton, Convention Coordinator

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Doesn't that make you more eager than ever to attend the convention? Probably most of your plans are well made by this time and we will see all of you July 13-18, in Philadelphia.

Here's another, special reminder of some of the special events planned for the convention. We hope you are all working hard on your projects for the spectacular Flea Market! And are you "getting your act together" for the talent show? Plan to attend the special classes and discussions being readied for us. Among all the variety, surely you can find something to interest each and every one of you.

Don't forget — Dues are due! Renew your membership in the Auxiliary, and come to Philadelphia, meet old friends, make new ones, and HAVE A GREAT TIME! □

The nominating committee has submitted the following ticket of officers for the Piano Technicians Guild Auxiliary for the year 1980/81:

President ... Jewel (Mrs. Jack) Sprinkle

1st Vice President ... Julie (Mrs. Ron) Berry

2nd Vice President ... Shirley (Mrs. Richard) Truax

Corresponding Secretary ... Agnes (Mrs. Charles) Huether

Recording Secretary ... Bert (Mrs. Walter) Sierota

Treasurer ... Balva (Mrs. Richard Flegle

Calculating Technician

Part IX

Dave Roberts

Last month we started our promised series of articles on algebraic formulas for piano scale evaluation or modification. It was pointed out that one can usually resolve the question of suspected flaws in a piano scale by calculating three acoustical quantities for each unison in the suspect part(s) of the scale. In approximate order of importance, these quantities are as follows:

- String inharmonicity
- Unison loudness/sustaining factor
- Hammer/string contact time

Our rule for good scales is that each of these acoustical quantities ideally should change in a smooth and proper fashion from unison to unison. We'll discuss exceptions as we go along. At the same time, individual string tensions should be maintained below a safe limit, as discussed in the March 1980 issue. The order of priorities above helps us decide what to do in those instances when it is impossible to get all three acoustical quantities to change in a perfectly smooth fashion simultaneously. More about this also as we go along.

Last month we discussed hammer/string contact time and its relation to tone production. As it turned out, we didn't find it necessary to calculate this contact time per se. Instead, we demonstrated how to calculate a simple ratio of measurable and calculable quantities which is closely related to hammer/string contact time, and stated that optimum smoothness in voicing requires that this ratio increase **smoothly** as we proceed up the keyboard. This ratio was given as **NT/H**, where **T** represents the individual string tensions in a unison, **N** is the number of strings in the unison and **H** is the so-called strike point distance. In most scales, the quantity **NT/H** indeed changes quite smoothly in the treble trichord sections, because the unison tension **NT** changes only slightly (usually decreases towards the treble end), while the strike point distance **H** changes in approximate proportion to the speaking lengths. We also saw in last month's calculations of **NT/H** in a Steinway concert grand that this ratio in a good scale can maintain a remarkable smoothness even across the bass/treble break, in spite of sudden large jumps in **NT** and **H** individually at this transition. Beyond this, one usually finds that the ratio **NT/H** does not always change as smoothly as one would like (for instance, in the wound monochord to bichord transition), even in the best scales. This is apparently in deference to maintaining a smooth change from unison to unison in the other two acoustical quantities above, as we shall see.

Now let's discuss the second of our three acoustical quantities, the so-called unison loudness/sustaining factor. The physical significance of this factor is that the larger it is (everything else being equal), the more quickly the vibratory energy in the unison is transferred to the soundboard, thus producing a louder but less sustaining tone. This factor is related to something physicists call acoustic wave impedance. The theoretical background for wave impedance and for perceived loudness in piano tones is beyond the scope of this short article, but can be found in the reference given at the end of this article, particularly chapters 13 and 17.

An algebraic expression for the loudness/sustaining factor, which we shall henceforth denote by the letter **Z**, is as follows:

$$Z = N^a d \sqrt{T[1+A(\frac{D^2}{d^2}-1)]}$$

All of the letter symbols in this formula, except the exponent **a**, have been used and defined in previous articles in this series: **T** is the tension (in pounds) of the individual strings in the unison, **N** is the number of strings in the unison, **d** and **D** are the steel wire diameter and overall diameter (in mils), and the number **A** is 0.89, 0.79, 0.27 or 0, respectively, depending on whether the strings are wrapped with copper, iron, aluminum or are not wrapped at all. This formula for **Z** is an updated version of the one in the handout sheets for my convention classes the past few years, but it is written in a different form. The principal difference is in the power (or exponent) of **N** which I have denoted by the letter **a**. More about the numerical value of **a** in a moment.

As an example of how both **Z** and the hammer/string contact time factor **NT/H** change across several scaling breaks in a good instrument, let's look at unisons **m =8 through 21** in a (1923) Steinway concert grand. Here, we have a break from copper wound monochords to iron wound bichords from **m=8** to **m=9**, then a break from iron bichords to iron trichords (**m=13** to **m=14**) and, finally, a break from iron trichords

to plain trichords which also happens to coincide with the break from bass bridge to treble bridge (**m=20** to **m=21**). An examination of the table reveals that, despite the wide range of unison types represented here and despite the wide range of individual string tensions **T**, the calculated values of the loudness/sustaining factor **Z** undergo a remarkably *smooth decrease* from unisons 8 through 21. There is a small reversal in this trend at **m=9** to **m=10** and from **m=13** to **m=14**, but these are rather minor. The table also reveals that the factor **NT/H** *increases* from unisons 8 through 21, as we predicted in previous discussions, but the change is somewhat rough across the various scaling breaks with the exception of the bass/treble break. Again, this is in conformance with our earlier assertion that smoothness in **Z** usually has priority over smoothness in **NT/H** when it is impossible to get both to change smoothly simultaneously. What is even more remarkable about this scale is that the calculated string inharmonicities also change smoothly through all these scaling breaks, but I'll defer discussion of inharmonicity until next month.

m	N	T	Z	NT/H
8	1	330	2202	35
9	2	243	2051	52
10	2	254	2059	55
11	2	249	1942	55
12	2	238	1791	54
13	2	211	1531	49
14	3	193	1603	69
15	3	182	1464	67
16	3	177	1388	67
17	3	177	1352	69
18	3	160	1202	65
19	3	152	1124	64
20	3	151	1100	67
21	3	201	1034	67

A couple of clarifying statements are in order at this point. The first concerns the numerical value of the exponent **a** in the formula for **Z**. I used **a=0.4** in the **Z** calculations for the Steinway grand because this gives the smoothest change in **Z** across all the scaling breaks. If I do the same set of calculations on the Bechstein concert grand that we've referred to in these articles, then I find that **a=0.6** gives the smoothest change in **Z** for this instrument. These results are quite similar, so my recommendation is to average them and henceforth use **a=0.5** in the formula for **Z**. Theoretically, the precise value of **a** depends on how closely matched, physically, the unison strings are, how well they are tuned during use and other factors. Rather than rely strictly on theory to tell us what a good value of **a** should be, I've chosen to let two fine concert instruments tell us, as I've just described. Incidentally, if we let **a=0.5**, then **N** to the power **0.5** is the same thing as the square root of **N**, so we can rewrite our formula for **Z** in even simpler form as

$$Z=d\sqrt{NT[1+A(\frac{D^2}{d^2}-1)]}$$

As an example, consider our old friend the Bechstein F1 monochord: **d=63 mils, N=1, T=474 lbs.** and the value of the quantity in square brackets is **4.83** (see December 1979 article). To calculate **Z**, we multiply **N** times **T** times **4.83**, which is **1 × 474 × 4.83 = 2289.4**. Then take the square root (use the $\sqrt{x}$ button on your calculator), which gives **47.85**. Finally, multiply this by **d** to get **47.85 × 63 = 3015**, i.e. **Z=3015** for this unison. Don't bother figuring out what the units are for this number. It's not important. The important thing is that, with an exception to be described in a moment, these calculated values of **Z** should *decrease smoothly* from the bass through treble sections of the piano — hopefully in a fashion simlar to that of the Steinway scale just described. It is not necessary, however, that every piano have the same values of **Z** at the same note positions.

The second clarifying statement I wish to make is that you will occasionally encounter a piano where **Z** takes a sizeable jump at the bass/treble break which may or may not be legitimate from a modern scaling point of view. Our rule that **Z** should decrease smoothly as you proceed up the scale presumes that the bridge/soundboard/rib structure has a smooth response to string excitation along the entire length of the scale. If, as sometimes happens, the manufacturer has made the geometry and placement of the bridges so that the bass bridge/soundboard/rib structure is much stiffer and/or more massive and therefore less responsive than its treble counterpart, then a smooth loudness/sustaining transition *requires* a jump *downward* in **Z** when making the transition to the treble bridge. If, however, the two bridges have comparable response to mechanical excitation at this break, then such a jump in **Z** is probably not legitimate and most likely was made to compensate other scaling errors. The most common example of this is making the topmost bass notes extra loud to compensate aurally for stridency (high inharmonicity) in foreshortened, unwound lower treble notes, especially in the smaller pianos. One tipoff, then, would be to calculate inharmonicities on either side of this break to see whether they change smoothly or take a large jump upward when making this transition to the treble bridge. If the latter, you may be justified in eliminating at least part of the jump in **Z** when rescaling for smoother inharmonicities. Uncertain situations like this admittedly make scale evaluation or modification difficult at times. For this reason, it is a good idea to test any modification near the break before unstringing the piano and preferably after hammers have been reconditioned or replaced and the action is in good regulation.

In a future article, we'll show more graphically how to use the loudness/sustaining factor **Z** during scale evaluation or modification, but first we need to discuss what is probably the most important acoustic quantity of all ... string inharmonicity. This will be next month's topic for discussion, so stay tuned to this column.... □

Reference: *Fundamentals of Musical Acoustics*. A. H. Benade, Oxford University Press, N.Y. (1976).

After Touch

David W. Pitsch

A CHECKUP AND A CHECK

QUIZ —

1) Does regulating the jack height to the balancier affect the strength of the repetition spring?

2) Does regulating the let-off affect the backcheck distance?

3) Which of the following affect the amount of aftertouch: key height, blow, jack alignment, jack height, let-off, drop, backcheck, repetition spring?

Do you know for certain as a particular grand regulation procedure is performed, how it will affect the other procedures? Or which of the other procedures will alter the regulation just completed? For instance, in the jack to knuckle alignment, changing the jack will alter the let-off and the amount of aftertouch. But if the capstan is changed, the jack will have to be realigned again.

Say that you are about to completely recondition the action of a grand. Do you have an orderly, logical approach figured out so that nothing will be overlooked with a minimal amount of doubling back, wasting time? Action reconditioning can be much simplified by using a thorough, detailed checklist. The advantages are obvious. Most of us cannot take the time to go over an action in one sitting. Interruptions are bound to happen, whether it be for lunch, overnight or for two weeks. Frequently there is a loss of memory as to what has been done, where you are now, and what was next. With a checklist, you need only to mark where you are when the interruption occurs.

Unless grand regulation is something you do frequently, you probably do not have the proper sequence memorized. Manuals are available from the different manufacturers, but none of them give a complete list of things to do. Neither do they agree on the sequence to be used. For instance, one manufacturer says to level the keys and lay the dip first. Whereas another says to regulate the jack, let-off and blow first, and then level the keys and lay the dip. Many more differences can be found, too.

In general, are not *all* grand actions made similar today? Granted, they may have different designs of whippens, action rails, sostenuto systems, etc., but they all have parts working in the same functions (minor exceptions). Therefore, it should be possible to create a checklist to be used on all grand actions. One which has all of the different steps one must go through to properly recondition and regulate in the most efficient and logical way. Here is a 50-point checklist for grands which does just that:

I. Keys & Keyframe

(1) Tighten all screws, remove action and keys
(2) Sand keybed, apply talc or slipspray.
(3) Seat action on keyframe, repair stripped screw holes
(4) Bed keyframe, backrail, frontrail, studs; sand as necessary
(5) Align action rail distance if needed (whippen/hammer center pin)
(6) Remove action, polish front and center rail pins, clean keyframe
(7) Put keys back on frame, check center hole for loose/tight, correct
(8) Check buttons, ease or rebush as needed
(9) Check keys at frontrail pins, ease or rebush as needed
(10) Clean and buff keytops and fronts
(11) Square keytops, check for warpage
(12) Adjust key height and level all 88
(13) Lay dip, at least .400 for now (.450 for Steinway)
(14) Space keys

II. Top Action (off of keyframe)

(15) Check action centers, repin or shrink as needed
(16) Travel hammers
(17) Check hammer angle/shank warpage, correct
(18) Reshape hammers
(19) Regraphite jack top and balancier window
(20) Space jack in window
(21) Round and file knuckles, needle if hard
(22) Clean repetition spring and groove (Steinway, Yamaha, Bosendorfer)
(23) Round whippen felt if needed
(24) Polish capstans
(25) Clean knuckles and backchecks

III. Alignments (install ation back on keyframe)

(26) Align action frame in piano (adjust keyframe stop block)
(27) Align hammers to strings
(28) Align and square whippens to knuckle
(29) Align jack to knuckle core
(30) Align and square backchecks to hammer tails

IV. Touch

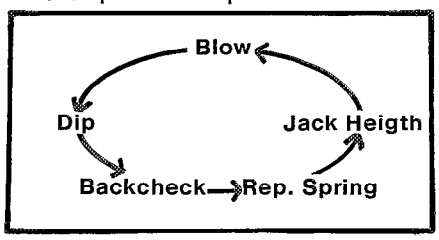
(31) Jack heigth to the balancier
(32) Blow
(33) Let-off
(34) Drop
(35) Aftertouch
(36) Backcheck distance
(37) Repetition spring
(38) Check gram weight resistance all 88 keys
(39) Adjust key stoprail

V. Dampers and pedals

(40) Lube and releather trapwork
(41) Check damper guide rail, ease or rebush as needed
(42) Check damper lift from key (½ blow)
(43) Check damper lift from lifter rail
(44) Adjust damper pedal rod length
(45) Adjust damper pedal stop
(46) Adjust damper stoprail
(47) Check string level/damper seating
(48) Sostenuto pedal rod length/ knife angle
(49) Sostenuto assembly (tabs) aligned to knife
(50) Shift pedal rod length and stop screw

A pretty extensive list. I am sure that it can be added to, but it should do in a pinch. Doesn't it make more sense to do all of the lower keyframe together, and all of the upper action work together? Two people can be working on the same action at the same time. Once the alignment is started, it is easier to follow through and align all of the action parts. Section IV, the touch, is the most variable part of the procedure. Depending upon the needs of the action, you may not want to use this sequence.

As a help here, I constantly fall back on something I call the "circle of five steps". There are five main regulation steps that are very interdependent upon each other:



If any of these five steps are very far off, it must be corrected first before any attempt is made to do Section IV. For instance, if the dip is shallow, it must be increased so that escapement can occur. Notice that step #13 in the checklist has laying the dip at .400 (.450 if Steinway). Your first reaction was probably, "He doesn't know what he's talking about, that's way too deep". Sure it is. But I find that making the dip too deep as I begin the regulation insures that escapement will always occur even if the blow, let-off, jack height, etc., is way off (which is normal). Of course when the aftertouch is set, all I do is add punchings. Which is a lot easier than trying to take punchings out!

Doing this is my preference, and I expect many to disagree with it. I won't go into a big lecture now; that comes in a few months in an article entitled "The Power Struggle-Dip Versus Blow". Going back to the "circle of five steps," notice that the key height, let-off, and drop are not in the picture. These three steps do not affect anything other than aftertouch, assuming that they are at least in the ballpark.

Remember the quiz at the beginning? It all boils down to knowing how one step affects the others, and how the others affect it. Once you know this, regulation becomes a simple matter of a checklist to see that nothing is overlooked. Using a check now and then insures that what has already been regulated has not been altered. A checkup and a check, that makes it easy.□

GRAND REGULATION CHART

This step directly affects → / ↓	Dip	Blow	Jack Align	Jack Ht.	Let-Off	Drop	Back Check	Rep. Spr.	Total
Key Height	X	X	X	O	O	O	X	O	4
Dip	—	O	O	O	O	O	X	O	1
Blow	X	—	X	O	X	X	O	O	4
Jack Align	X	O	—	O	X	O	O	O	2
Jack Height	O	X	O	—	O	O	O	X	2
Let-off	X	O	O	O	—	X	O	O	2
Drop	X	O	O	O	O	—	O	O	1
Back Check	O	O	O	O	O	O	—	X	1
Rep. Spring	O	O	O	X	O	O	O	—	1
Total	**5**	**2**	**2**	**1**	**2**	**2**	**2**	**2**	—

1980 Technical Institute Update

Those who follow these Technical Institute write-ups probably remember that I mentioned a surprise . . . Here it is. In the past, we have had some pretty prestigious grands tuned at various "tuning concerts." I am sure that many had the secret wish to see what a fine tuner can do with an average vertical piano. In fact, I have received many letters asking for such a demonstration. Well, I went even further and pursued the possibility of having a fine tuner publicly tune a "run-of-the-mill" spinet piano. Frankly, my action was prompted by a letter I had received from Mr. Waldemar Dabrowski, and I quote: "Since most of the time we are not tuning SD 10's or Bosendorfers or whatever, we have to face these miserable spinets and consoles. It would be so reassuring to hear a master technician work on an XXX and know that we are not the only ones who fuss and cuss and the virtually impossible task of making it sound like a reasonable reproduction of a Steinway."

As much as I liked the idea, it seemed difficult to find the right person to do it. After all, how can you expect a "tuning concert" to be performed on anything other than a fine concert grand? I am happy to let you know that I have found the craftsman to do it. None other than our National Secretary/Treasurer Charlie Huether will demonstrate his way of handling the tuning of an inexpensive spinet. I guess there is no need to elaborate on the impossibility to perform a concert tuning on a spinet piano. Surely the chance to see (here) a fine tuner do a respectable job under the circumstances should be intriguing.

Please look for the Technical Institute column next month for some more classes. Until next time.

—Ernie Juhn,
Institute Director

IMPROVE YOUR TUNING
WITH THE HELP OF
AN EXPERT TUTOR
AT THE
1980 PTG CONVENTION

VON DER WERKSTATT

Priscilla and Joel Rappaport

PIANO TUNING — REPAIR — REBUILDING

The above description of services appears on hundreds of business cards and advertisements. It has become a phrase used almost unconsciously to denote a "full service" piano technician; most of us use it to show our versatility and hope that this versatility attracts customers interested in piano service rather than just piano tuning.

We looked closely at this recently because we must now deal all the time with all of this service since we are working exclusively in our own shop near Austin and are no longer with the University of Texas at Austin. Mainly, we were concerned with the implications of advertising "rebuilding." Can we offer all of the operations which go into calling a piano rebuilt? Also, what if a new customer should ask us to evaluate his or her piano which had recently been sold as rebuilt and was not satisfactorily operating any more? This actually happened this past week and brought up the question: Can a piano that has been restrung (with cracks in the soundboard and loose ribs) with #4 tuning pins in the original pinblock which is falling apart, and outfitted with new hammers, shanks and whippens, be called rebuilt? What has to be done to a piano so that it ethically can be called "rebuilt"?

The Update pages in the May 1979 Journal printed a Cincinnati Chapter Service Standards Committee report which did just that. Its decision was that — "*A rebuilt piano has been restored to the following specifications:*

1. Shim soundboard and refasten ribs. Soundboard without a crown must be replaced. Bridges repaired or replaced.

2. Replace pinblock.

3. Replace hammers, shanks, flanges, and keyframe felt.

4. Replace damper felt.

5. Rebush lyre.

6. These items should be replaced, at the discretion of the technician, if necessary: key bushings, whippens, back-checks, and keypins."

The most striking part of this well-thought-out report is the replacement of the pinblock. It is pretty clear that if the block is not replaced, the instrument was not rebuilt. We would hope that some standards like these are adopted and well publicized so that technicians all speak the same language and do not inadvertently mislead customers into thinking they got more than they really did.

In the report, there are six items to be replaced for sure in a rebuilt piano: pinblock, hammers, shanks, flanges, keyframe felt and damper felt. Of these, it is necessary to provide new felt for the keyframe and dampers and, as discussed a new pinblock. That leaves the hammers, shanks and flanges to be replaced. Our question is: Do these parts have to be replaced by newly manufactured parts or can the old, perhaps original, parts be reworked up to new standards? As an example, it is not unusual in Europe to send a set of hammers (still on the shanks) to a hammer manufacturer and get all new felt put on the hammer heads. Is this in keeping with the spirit of a rebuilt instrument?

Sometimes we have fun comparing our two top interests: pianos and airplanes. The manufacturers of aircraft engines recommend major overhauls at certain intervals; it varies with each type of engine. During a major overhaul, the engine is completely disassembled, inspected, parts are repaired or replaced as necessary and the engine is reassembled, just as a piano is treated in rebuilding. In testing the parts, the highest standard is the "new parts" or "new dimension" standard. This does not dictate that a new part must be used, but that the old part or a replacement which has been used comes up to the standards set by the manufacturer for a new part. Can we do the same with piano parts?

One example comes to mind, and that is a set of grand shanks and flanges for an older Steinway. If you wanted to retain the cloth bushings, the only way to do this when rebuilding — until recently — was to rebush the old shanks, repin the flanges and replace the knuckles. Couldn't you use these rebuilt shanks and flanges and still have the action come up to rebuilt standards? Some of the considerations that must be made in using older parts are the condition of the wood and how used these parts are. Brittle wood is not to be utilized in a rebuilding project. In our example, very old flanges may crack when repinning

is attempted. If this set of flanges has already been repinned, perhaps the pin holes are too large to use a reasonable size center pin in a rebuilding job. Shanks that have been "tapered" on the end should never be used. Actually, in most instances it is better to ream the hammer than take wood off of the end of the shank.

The Federal Aviation Administration, which has rules and definitions for just about everything to do with flying, conveniently defines a rebuilt engine in FAR 91 .175. It is, "A used engine that has been completely disassembled, inspected, repaired as necessary, reassembled, tested, and approved in the same manner and to the same tolerances as a new engine with either new or used parts."

We could say the same for rebuilding a piano and still stay within the guidelines set down by this Service Standards Committee Report. □

Assistance in researching the aviation information from The *Aircraft Owner's Handbook* by T. R. V. Foster, Van Nostrand Reinhold Co. pub., available through the Aircraft Owners and Pilots Association, Washington, DC.

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Notices ot seminars will be accepted for insertion in THE JOURNAL no sooner than six months before an event. In addition to the listing below, your seminar may be publicized through onefreedisplay ad, two columns by two inches deep. It is the responsibility of the advertiser to submit copy for the ad to the Home Office. Material must be received six weeks prior to the publication date of THE JOURNAL.

Note: All seminar dates must be approved by the Conference Seminar Committee. Please submit the appropriate information on the Request for Seminar Approval Form.

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Southfield, Michigan
Contact: Calvin Champine
2145 Dalesford
Troy, Ml 48098

June 7, 1980
FRESNO CHAPTER TECH. SEMINAR
Fresno, California
Contact: Charles Hansen
504 North Walch
Porterville, CA 93257

July 14-l 8, 1980
Piano Technicians Guild
23RD ANNUAL CONVENTION & TECHNICAL INSTITUTE
Philadelphia, Pennsylvania

September 19-21, 1980
WISCONSIN DAYS SEMINAR
Milwaukee, Wisconsin
Contact: Jonathan Moberg
2420 N. Bremen Street
Milwaukee, WI 53212

October 5-7, 1980
FLORIDA STATE CONVENTION
Jacksonville, Florida
Contact: Barney J. Johns
3546 Oleander St.
Jacksonville, FL 32205

October 11-l 2, 1980
OHIO STATE CONFERENCE
Cincinnati, Ohio
Contact: Willard Sims
c/o Baldwin Piano & Organ
1801 Gilbert Avenue
Cincinnati, OH 45202

October 17-l 8, 1980
TEXAS STATE SEMINAR
Dallas, Texas
Contact: Martin Wisenbaker
808 Cordell
Houston, TX 77009

In the Field

BEN McKLVEEN

In the last several weeks I have had to untangle the problems of twopianosafflictedwithincorrect keyboard touch weight. Involved were a grand and a console and the paradox of thesituation is that the weight problems were the reverse of what one would normally expect. The grand was very light (46 gms.) and the console was very heavy (approximately 70 gms.).

Twenty-five years ago, the touch weight on most pianos was about 50 grams. Vertical pianos, spinets and consoles were generally a little less — more like 46 to 48 grams. Grand pianos would weigh in at about 52 grams. The reasoning seemed to be that people who bought spinets were less experienced pianists who played for their own amusement (or amazement), and the grand piano was for the "serious" performer who needed the extra resistance for good keyboard control. Today's grands tend to run about 5-10 grams heavier, thus increasing the difference between the two types of pianos.

At this point, a few definitive words about touch weight are in order.Touch weight is the amount of weight needed to depress a key to the point just before let-off. It is measured in grams. The measurement is taken by first depressing the sustaining pedal to remove the weight influence of the dampers, and then placing weights on the key directly over the front rail pin until the key slowly depresses to the point of let-off.

The touch weight is established in grand pianos at the time of manufacture after the regulating process and is set when all parts are brand spanking new and presumably in the best adjustment possible. The weight is set by adding lead weights to the key fronts until the manufacturer's specifications are met. It might be necessary to add lead to the back of some keys in the high treble section. The process of weighting is somewhat haphazard in the construction of verticals, especially the least expensive ones, but the touch is, by design or chance, usually light.

There are a number of factors that can cause touch weight to change. Wear and tear can cause bushing deterioration and lessen friction, thus making the weight lighten. Corrosion or swelling of parts as a result of atmospheric change can make actions extremely heavy and sluggish. Poor regulation can play havoc as well. So, before any change in touch weight is attempted, the action should be put in the best possible order.

The problem of diagnosis can be sticky, as will be seen in the first example I will discuss — the vertical with the heavy touch.This piano was not a cheapie, it was a new, high quality console and to the casual eye seemed perfect. Yet the ownerwas unhappy.Three tuners had trouped through her house, pronounced the piano fit, and told her to give it time to "break in." In her words, the piano was "hard to play." She got tired quickly and lost interest in further playing. By the time I arrived on the scene, she was ready to sell it and look for another instrument.

I listened to her recital of woes. Since she did like the tone of the instrument and the case appealed to her, there was justification in trying to solve her problems. The piano was new, but I checked it over anyway. The keys were free and so were the center pins. The regulation — level, dip, let-off and checking — was fine. One small discrepancy showed up: the hammer-to-string distance was long, slightly over two inches. I shortened it to a little less than 1⅞", and took up the lost motion. At this point I realized why she was having so much trouble. The spoons were picking up the dampers very soon after the hammer started toward the string.This became exaggerated by the change in hammer distance that I had made and the damper weight added intolerably to the touch. I readjusted the spoons to allow the dampers to lift just before escapement and the problem was solved.

The solution to this piano's problems did not involve lead in the keys. In fact, adding lead would have created other problems. In vertical pianos, some control over touch weight is possible by subtle changes in regulation, especially damper lift.

The problem of the grand with the light action required a good deal more straightforward solution.

It was a good quality older grand piano that I had completely re-regulated. The owner had gone back to school as a full-time music student after 15 years. She found that practicing at home was doing more harm than good because her piano was so much lighter than her teacher's piano at the university.

The piano had been weighted at 52 grams originally, but wear had reduced the touch to a rather uneven mess, averaging about 46 grams. She wanted it brought up to at least 60 grams.

Taking the action to my shop, I removed the key stop rail which allowed me to lift each key up on the balance rail pin to expose the key leads in the side of the key. It may seem strange but the process of making the key weight heavier is accomplished by **removing** lead from the front of the key.

I set my touch weight at 60 grams. Starting at A^1, I lifted the key, and using an electric drill, I drilled out lead until the key dropped slowly with my test weight on it. I then went to the next key and so on up the keyboard. Sometimes it was necessary to drill out an entire key lead and a portion of another in the key to get the correct weight. In the high treble it might be necessary to remove all lead in the front and perhaps add a small lead to the rear of the key. It is wise to go back and check over all that has been done to see that the touch is uniform. Fatigue or a momentary lapse of attention can cause slight irregularities to creep in, and good pianists can detect this kind of mistake very quickly.

Key weighting problems are not uncommon. Often they go unrecognized by the pianist and undiagnosed by the technician. Only when the problem gets the attention of both the performer and the technician can it besolved. So it pays to listen to customers, especially to their vague complaints. Adroit questioning coupled with imaginative translation is sometimes necessary to get to the basic problems. Of course, one must know what options are available to effect satisfactory solutions to the problems. □

The International Scene

Don Morton, Immediate Past President
and
Fred Odenheimer, Chairman,
International Relations Committee

The International Association of Piano Builders and Technicians (IAPBT) was organized last July in Minneapoliswith thecooperation of the Japanese Piano Technicians Association (JPTA) and other interested piano personnel.

Slowly but surely our new international organization is beginning to function. We have received wide publicity in several of the leading trade journals in Europe explaining the purpose and goals of our new international organization. In fact, enough information is becoming available to warrant a monthly spot in The Journal. Herearesome events taking place in other parts of the world that should be of interest to our members —

Japanese technicians are celebrating the 50tn anniversary of their organization in May of this year. They have extended a cordial invitation to all Guild members to attend this anniversary affair. For further information, please contact Kenzo Utsunomiya, 206 Lido Place, Fullerton, CA 92635.

Our chairman of international relations, Fred Odenheimer, has been invited and plans to attend the annual convention of the Guild of German Piano Builders (BDK) and the EUROPIANO (European Union of Piano Makers Association) in Bad Branstedt, Germany, May 13-l 8. This event will be in conjunction with the 100th anniversary of the Steinway factory in Hamburg. The boards of these two organizations will recommend to their respective memberships that these organizations join the newly formed IAPBT.

The next meeting of IAPBT (charter meeting) will be held at Lake Thun, Switzerland, April 27-May 3, 1981. This meeting will be in conjunction with the EURO-PIANO convention and the Swiss Association of Piano Builders and Tuners. We have been advised that facilities at Lake Thun will accommodate only 30 representatives of IAPBT. Since this will include organizations other than PTG, we will need to indicate as soon as possible how many representatives we expect to attend. Please send your inquiries to the home office. ❑

Accent on Tuning Problems

by Newton J. Hunt

MUSIC
QUALITY STABILITY
TONE TOUCH TUNE
COST BEAUTY DURABILITY
SERVICEABILITY

Music is the ultimate goal of the piano, an objective that sometimes gets lost among the tunings, regulations, voicings, etc., etc., etc. At the same time, we must be concerned with the quality and stability of our work and of that of the instruments. Tone, touch and tune are our daily bread, as they are for the musicians, if in somewhat differing manners.

Of great importance to all is cost, beauty and durability, but the final stone in my echelon of priorities is essentially ours and that of the manufacturers or rebuilders: serviceability. In the designing and fabrication of pianos, and during rebuilding, certain practices, procedures and oversights creep in that can have a dramatic effect on one aspect of serviceability — tuneability. The next time you tune a piano that is a pleasure to tune, you can be assured that many factors contributed to that quality. Here are listed a few of the possible sources of trouble on those pianos that are not as tuneable.

The tuning pins must be round, with a consistent diameter and radius. Poor pins can be too long, too short, out of round, change dimension from pin to pin and from the top to the bottom of the thread. They can be poorly plated, the threads poorly cut, the metal too soft, the holes out of place and too small for the larger gauges, and finally, they may have unsquare tips. The tuning pin may appear to be a very simple piece of metal, but when carefully considered, its complexity emerges to demand our attention.

Tuning pins that are too tight require much effort that could best be used to control the pitch of the strings. These pins leave one with less than the best feel for the block and what the pin is doing in the block. Tuning pins that are too loose lack ease of control, long-term durability and stability of the tuning.

Pin block materials and construction need not be discussed here except to define our requirements; rigidity, dimensional stability, resilience and durability. If made and installed with care, all else is fulfilled. What is required at the interface of the tuning pin and the pin block is a slightly different matter. Wood and metal should come togetherwithout any other matter at all; no resins, oils, moisture or carbonized wood. Some tall orders, but the factors of greatest importance are the care in drilling the holes and the cleanliness of the pin and the stringer.

I have seen beckets (the part of the string that goes through the tuning pin) so long that they have been wound part way around the tuning pin in the opposite direction by an adjacent pin. This is a little long; the proper length is through the pin but not out the other side. The reasons for this are that overly long beckets make repinning that block difficult in the extreme because the becket will not come

out of the pin without destroying the coil. The overly long becket represents a painful hazard to the fingers when moving the tuning hammer and, finally, it looks tacky.

Coils that are not tight against each other leave a pin too high, tend to cause tuning instabilities and lack the beauty of neatness. On the finer gauges, a becket can be pulled out of the hole over a period of time. This is why old piano makers put four and five coils in the treble; also, the holes in the pins were bigger than the holes in present pins. Three coils are sufficient; two and a half are not.

Tuning pins that have been left too high present several problems to the tuner, not the least of which is tuning instability. These pins will not twist any less than lowered pins, but the twist can be better perceived and controlled when the majority occurs in the block instead of above it. The principle of an equal force applied to a long and a short object will bend the longer the most applies all too well to tuning hammer and tuning pin. Coils should be 1 /16" to 1/8" above the plate. If they have to be left higherthan that because they are too tight, then they are just that — too tight.

High pins will become looser with time because the block/pin interface is smaller per square inch by how much too high it is. If a 3/0 x2½" pin is ⅛" too high, it loses $0.12 in^2$ of block/pin interface, or 8.3% of all area. This presents substantial loss of pin security. When this pin does become loose in two or ten years, it will then have to be driven. Because the block has become bottlenecked at the bottom, the pins will therefore be held firmly ONLY at the bottom, and a drastic twist problem then occurs. This pin would not become loose beyond control for many more years if it were down where it belongs. Besides, a loose low pin is more tunable longer than a looser high pin. Because of the leverage, a high pin has,the upper laminations of the block or the plate bushings can become deformed into oval holes, which do not hold pinswell.

The point is that if they are down where they belong when the instrument is strung, there is far less a future problem for the tuner and for the stability of the tuning, which, after all, is the name of the game.

The strings themselves can help or hinder the tuner. With the new and inexpensive scaling information available, there is no real excuse for current production or for rebuilts to be untunable because of poor scaling. I see a time not too far in the future when all rebuilts will be rescaled for smoothness of tuning, tone and power. There are some that are doing this now, but soon all will be doing so in order to stay abreast. I personally think it is wonderful that I am in afield that is progressing and is not, as some of my customers comment, a dying industry. It certainly is not, and we will soon be seeing more fine pianos coming into the market.

Some pianos were very well scaled but have been repaired or restrung with the wrong size of wire. This is not as uncommon as one might think. Never assume that because the stringing appears to be from the factory that the factory stringer used the right wire sizes. Or that several replacement strings are of the right size. Either learn to use the math and calculators and rescale it yourself, or have it done by someone who can — just to be on the safe side.

The worst thing that is happening to piano tone, scales, and inharmonicity is strings wound with too little copper. According to the most recent information on scaling, the copper should come to within ⅜" to ½" of the terminus of the string at BOTH ends. Inharmonicity increases by the CUBE of the distance left unwound. Changing the specification of the windings from ½" to 1" at both termini increases the inharmonicity by eight times. What this does to the tone is unconscionable, and what it does to the tunability of that string can well be imagined.

Strings that are not properly seated on the bridge can cause the pitch to shift while the note is sounding. The unanswered question is which pitch is the proper one,thefirstorthesecond? I have chosen the second, since it is the tone with duration. Unseated strings also cause voicing problems.

One problem that also has the bridge as source is one that has been notched so that the vertical plane and the horizontal plane of the string vibration are of different lengths. The string has an almost circular motion so the horizontal bridge notch and the vertical bridge pin must have the same terminus plane perpendicular to the string's length. Otherwise, the string has severe partial mismatches and/or false beats to the extent that unisonsare difficult or impossible to tune.

When there are severe angles at agraffes or capo bars or at the pressure bars, then the tuning pins must be turned a large amount before the pitch changes. This can also happen with very old strings that have conformed to the angles and those that have a severe corrosion problem. Pressure bars can be raised (with the tension lowered to prevent shearing a screw), the piano may need restringing, and some thought can be given to modifying the plate slightly to reduce the angles, again cautiously.

Duplex scales can be so out of tune that they create a lot of noise that is difficult to tune against. I am not one who thinks that the piano will sound better without the duplex. I take some masking tape and mute thestrings between the bridge and the aliquots, which makes tuning much easier; I then remove the tapeforfinal checking. If one or two notes are causing severe problems, a little plain Vaseline, judiciously applied near the aliquot, will mute the nonspeaking length. The Vaseline can be removed easily if need be.

Hammers that are too hard, too soft or poorly shaped cause their own problems, as do hammers that have too little felt.

This does not pretend to be a complete listing of all the trouble I have seen, but I wished to show where attention to details can make or break a good piano. Trifles make for perfection, but perfection is no trifle. □

Obituary

George M. Norton
Central Illinois Chapter

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Madison, WI 53705

Northwest Florida Chapter
Durham, Philip T.
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Panama City, FL 32405

Pittsburgh Chapter
Stern, Robert M.
Box 207
Warrendale, PA 15086

Johnson, Dale A.
234 Kentucky Dr.
Lower Burrell, PA 15068

Puget Sound Chapter
Lindley, Bruce S.
1405 Lewis St., Apt. 33
Centralia, WA 98531

Southwest Florida Chapter
Manwiller, Richard M.
2220 Capri Drive
Clear-water, FL 38515

Twin Cities Chapter
Wright, Anthony S.
Rt. 1, Box 76
Ettrick, WI 54627

ASSOCIATE

Detroit-Windsor Chapter
Henry, Ron
23970 McAllister
Southfield, MI 48034

ALLIED TRADESMAN

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Charlottesville, VA 22901

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Dusedau, Stefan J.
364 Knickerbocker Rd.
Englewood, NJ 07631

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Snyder, David B.
79 Furnace St.
Robesonia, PA 19551

Sacramento Valley Chapter
Lemon, Sonja S.
4560 Greentree Dr.
Sacramento, CA 95823

APPRENTICE

Pittsburgh Chapter
Steger, D. Keith
1701 Pine Valley Dr., #4
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Reading-Lancaster Chapter
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RD #3
Boyertown, PA 19512

Herring, Dawn M.
603 Pleasure Rd.
Lancaster, PA 17601

Vancouver Island Chapter
Beck, Jacqueline
Box 3004
Courtenay, BC V9N 5N3

STUDENT

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Allen, Paul (Syd) S.
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Santa Monica, CA 90405

Billington, Steven M.
7043 Atoll Ave.
N. Hollywood, CA 91605

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951 McCarthy Court, Apt. 3
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North Central Wisconsin Chapter
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272 Sunnyside
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RECLASSIFICATIONS

REGISTERED TECHNICIAN

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Jacksonville, FL 32205

Dorning, Richard L.
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Auburn, WA 98002

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REPEAT SERVICE BUSINESS and a loyal clientele are made easy with The *Piano Owner's Guide* by Carl D. Schmeckel to open the door to success! Hundreds of tuner-technicians use it every day! Hardcover — $6.95. Softcover — $3.95. Ask for discounts on quantity purchases. **Apex Piano Publishers, 2621 S. 8th St., Sheboygan, WI 53081. Phone: (414) 458-4489**

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1875 STEINWAY SQUARE. Excellent condition for age. Offers considered. **(417) 732-6657, after 6**

QUALIFIED TECHNICIAN wanted to purchase established business in sunny California. Write for details, state qualifications. **Walt Eckstein, 1020 West Las Flores Way, Santa Maria, CA 93454**

PIANOS FOR SALE -Always on hand, 150 to 300 uprights! Plain case, art case, and players. Also 50 to 150 grands at all times, as is or rebuilt. Excellent brand names — no junk! All set up for inspection. Lowest possible prices. **Call for quotes: Owen Piano Wholesalers, 2152 W. Washington Blvd., Los Angeles, CA 90018. Telephone: (213) 883-9643**

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WANTED — One Aeolian American grand piano fallboard spring. **Accardi, 3330 Taylor, Bridgeton, MO 63044 (314) 291-5222**

WANTED TO BUY — Mason & Hamlin Grand Piano. Want one that was a player. I have a player mechanism to install. Will pay handsome reward. **Brady, 4609 Crankbrook, Indianapolis, IN 46250 — (317) 259-4305 after 5 p.m. (317) ,849-l 469**

WANTED — Schaff, black leather tool case made from 1950-60 with side pouch and three parts drawers in bottom. Must be in excellent condition. **Ralph Stilwell: 103 Point Bluff, Decatur, IL 62521. (217) 423-6120**

HELP WANTED

CUSTOMER FILE ($4,000.) over 700 cards N. Va. should make over $20,000. first year. Prefer R.T.T. but will consider apprentice. **Call (816) 438-7491**

PIANO TECHNICIAN-For large Houston retailer. Transportation, good benefits. Send resume to: **Holcombe-Lindquist, Inc., 3133 Southwest Freeway, Houston, TX 77098, Attn.: Douglas James; or call (713) 526-7691**

PIANO TECHNICIAN WANTED — Good pay, good working conditions. **Benefits.Ansdell Piano, Anaheim, CA (714) 821-3311**

RTT WOULD LIKE JOB with institution or quality rebuilding shop. I have three years experience, including some rebuilding and player work. Willing to relocate. Write **Michael Shapiro, 118 Berkshire Street, Cambridge, MA or call (617) 864-0317**

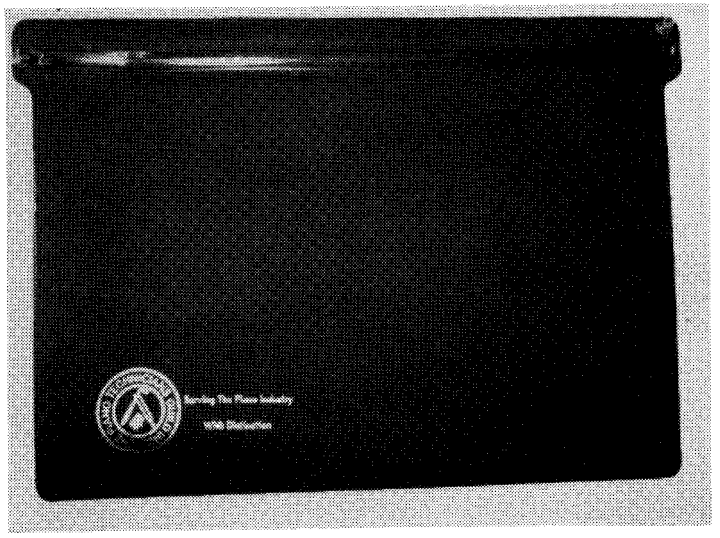
MISCELLANEOUS

TUNERDATA: (1) Mail reminders make money for you; (2) geographical files make money for you; (3) we'll do them both for **you. Write Ed Fesler, 11315 Rich Circle, Minneapolis, MN 55437**

CORRESPONDENCE COURSE-Piano tuning-repairing. **Don Flippin, RTT Member PTG, 569 N. McLean, Memphis, TN 38112 (901) 272-3833**

NEW!

New from your Piano Technicians Guild Sales Department



Meeting and Sales Portfolio

In response to popular demand, we now have available these navy blue, zippered, vinyl portfolios. They measure 16"x12" and have the Guild logo in gold stamped on them. Quantity discounts!

Quantity	Price
1-25	$2.50 each
26-99	$2.25 each
100 & over	$1.95 each

(Don't forget to include handling and shipping costs with your order.)

Piano Technicians Guild, Inc.

PLEASE SEND:	Quantity	Price	Total

SUBTOTAL

ADD SHIPPING AND HANDLING

If order totals	Below $5.00	$5 to $9.99	$10 to $14.99	$15 to $24.99	$25 or More
Add	$1 00	$1.50	$2 00	$2.50	None

Washington State residents only add 5.3% sales tax

Enclose check or money order for this amount TOTAL U.S. FUNDS

ORDERS UNDER $10 MUST BE PAID IN ADVANCE.

Name _____

Address _____

City/State or Province _____

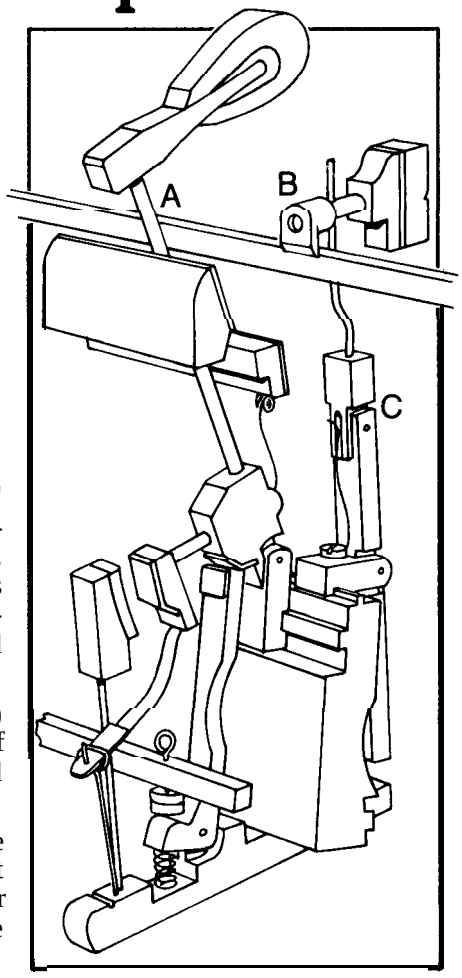
Zip/Postal Code _____ Phone _____

Chapter _____ Nonmember _____

MAIL TO: PIANO TECHNICIANS GUILD
113 DEXTER AVENUE NORTH
SEATTLE, WASHINGTON 98 109

PLEASE FEEL FREE TO PHOTOCOPY THIS ORDER FORM

The Wurlitzer sostenuto system –so simple to service



INSTANTLY ACCESSIBLE FOR SERVICE

The sostenuto feature, a popular option on all current Wurlitzer studio, school and chapel pianos (Models 2962 and 2960), follows the principles proved in fine grand pianos and is even easier to service.

Operated from a sostenuto bar (A) actuated by the center pedal, any of 68 dampers may be picked up and held for sustained tones.

A Neoprene sleeve (B) on the damper block shaft has a lip that catches behind the sostenuto bar blade to hold the damper. Neoprene is a virtually indestructible material.

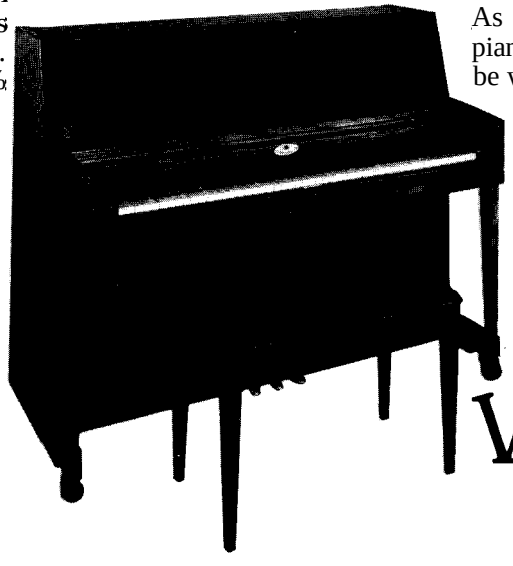
NO NEED TO REMOVE THE ACTION

Technicians will be pleased to know that all adjustments may be made from the *top* of the piano. It is not necessary to pull out the action.

Another fine point is our unique damper lever (C) which is made in two pieces, hinged and sprung to provide flexibility and make adjustments easier.

A new all-spruce Duraphonic Multi-radial'" Soundboard improves tuning stability. In tests with up to 90% relative humidity, solid spruce expanded 5 times more than the new Wurlitzer design, causing more serious changes in string tension.

Wurlitzer Conservatoire Model 2960 with optional sostenuto meets all known school specifications. Maximum string length is 48¾ inches.



As you continue to service our pianos, your comments will always be welcomed.

WURLITZER®
The Music People
DeKalb, Illinois 60115

PIANO TECHNICIANS GUILD

MAY 1980 UPDATE

A Special Report to The Membership–

Clarifying The New Testing Exam

Charles Huether, Secretary / Treasurer

Let's go back a few years to the beginning of this Tuning Exam project. As you must remember, with the revision of the Bylaws, the old issue of uniform entrance exams came to the fore once more. As long as I can remember, and that goes back to 1960 for the Piano Technicians Guild, there has been disagreement among members as to the uniform examining policy. The Piano Technicians Guild has always had committees working and trying to develop exams and procedure and training for examiners so that the same tests would be administered in the same way all over the country so that all members would be accepted wherever they went as having at least the same minimum level of competence. Many Chapters refused to accept this as reality and have insisted that transferees be retested before admission in their chapter. This has been a bone of contention, for membership in a national organization should provide acceptance in all parts of the country. Members who taught beginners, in some cases also tested and approved their entrance into the Piano Technicians Guild, a terrible conflict of interest. Yet things like this did go on. Applicants complained that examiners were using personal feelings and prejudices to reject them, not their skill or lack of it.

When Al Sanderson first suggested that there might be a way to develop a uniform test and a uniform way of grading it, Don Morton, seized the opportunity to make that a goal for the Tuning Exam. Comm. and out of the work of Sanderson and Jim Coleman over several years, what we have in the works developed. So much work and effort has gone into this, so much money and time, and so much good, high level statistical and scientific analysis that it is hard for me to accept the fact that it will go down the tube because of a lack of support for the final lap. Those of you who have attended the last two Council meetings know how enthusiastically and approvingly the committee reports were accepted. The method and the theory are in place. There is a general acceptance by all who have studied the plan. This is the year of the logistical problems. We need to have something real and reasonable ready to put in place when Council approves in July. For this reason, nothing should be done to discourage those who have the responsibility for developing these logistics.

Without doubt, there will be a slowing down of membership testing initially. In fact it is happening now, as some chapters are wondering if it won't be better to wait until the new test is in place before testing any more applicants. They are slowing down in anticipation of the new test. So, it is absolutely necessary that this program get off the ground and flying with a great big bang of enthusiasm and support from everyone so that reluctance and objections can be properly handled and that membership will not suffer inordinately.

We must keep in mind the following:

This Tuning Test is **not** a program to develop the **one** best way to tune a piano.

This Tuning Test is **not** a program to prove machine testing superiority.

This Tuning Test is **not** a program to develop a class of super tuners.

This Tuning Test is **not** necessarily a program to make it more difficult to become a member.

This Tuning Test **is** an attempt to develop a test which will be given uniformly all over the country. It can be measured and graded exactly the same all over the country. It is the closest thing we have to a uniform test. The results will be that those who pass the test will have a **minimum uniform level of competency**. Where we place that uniform minimum level depends on what Council accepts as a passing grade. At present, the passing grade is set to coincide with what has been statistically proven as the same or equivalent 80% level we have been applying so loosely in our present testing procedures.

Whether we should make passing more or less difficult is an entirely different story and should not be confused with the basic purpose of this testing procedure. That is: *a uniform test which will be administered all over in the same way and graded in the same way because of the detailed controls which have been developed. The result will be a uniform minimum level of competency of all those who enter the Piano Technicians Guild after passing this test.*

And remember, present members don't have to take the test. We are not re-testing membership, a ridiculous thought. All of us, from the best to the worst, presently members are still members. This is just a change of testing procedure for new applicants. □

Harmonizing With the Teachers

—Fred A. Fornwalt, Chairman
Teacher Relations Committee

As technicians, we sometimes get so caught up in the nuts and bolts ends of our business that we can easily overlook a very important obligation, the education of the piano owner.

One of the most effective methods of educating the piano owner is through piano teachers and music educators who are often asked for recommendations regarding piano service. When approached properly, the music teacher can be very beneficial in not only building clientele, but in turning it into a regular six-month business.

Through such advertising we can show that we are interested in the work of the teacher and, in turn, stimulate questions which can be handled in personal follow-ups. By such activities, we can establish rapport individually as well as collectively with the teaching community. However, in such dealings we must remember to listen to the teachers and understand their needs so that we may ultimately help them to become better consumers as well as better teachers.

We are all on the same team. □

ANNOUNCING

Starting with the current issue, Cathy Lauro replaces Sandra Parsons as managing editor. Sandra has accepted a position with the Boeing Company as publicist and writer.

Cathy, who brings to the Piano Technicians Journal several years' experience in graphics and publication production, looks forward to the challenge and rewards involved in working with all of us.

Philadelphia 80

PIANO TECHNICIANS GUILD 1980 CONVENTION
AUXILIARY CALENDAR

SUNDAY — JULY 13, 1980

Auxiliary Center Open ..... Jefferson Room

Place of Worship – Theatres – Parks

MONDAY — JULY 14, 1980

Auxiliary Center Open ..... Jefferson Room

Museums – Theatres – etc.

TUESDAY — JULY 15, 1980

9:00 a.m.-12:00 noon ..... Auxiliary Opening Assembly
Jefferson Room

11:00 a.m.-11:30 a.m. ..... Members-at-Large Meeting
Jefferson Room

1:00 p.m.- 5:00 p.m. ..... Auxiliary Center Open
Jefferson Room

1:30 p.m.- 2:30 p.m. ..... Slide Show–Kathryn Snyder
Jefferson Room

Walking Tour – Mint, Independence Square – Gallery

3:00 p.m.- 4:00 p.m. ..... Talent Show Organization
Ginny Russell
Jefferson Room

WEDNESDAY — JULY 16, 1980

8:30 a.m.-12:00 noon ..... Auxiliary Center Open
Jefferson Room

9:00 a.m.-10:00 a.m. ..... Class–"What Is This Thing Called A Piano"–Bill Pealer RTT
Jefferson Room

10:30 a.m.-12:00 noon ..... Auxiliary Council
Jefferson Room

1:00 p.m.- 5:00 p.m. ..... Auxiliary Center Open
Jefferson Room

1:30 p.m.- 2:30 p.m. ..... Talent Show
Jefferson Room

3:00 p.m.- 4:30 p.m. ..... President's Tea
Crystal Ballroom

THURSDAY — JULY 17, 1980

8:30 a.m.-12:00 noon ..... Auxiliary Center Open
Jefferson Room

Walking Tour – Mint – Gallery – Independence Square

9:00 a.m.-11:00 a.m. ..... Class–Barbara Martin, RTT

12:30 p.m.- 2:00 p.m. ..... Luncheon
Crystal Ballroom

1:30 p.m.- 5:00 p.m. ..... Auxiliary Center Open
Jefferson Room

2:30 p.m.- 3:30 p.m. ..... Slide Show–Kathryn Snyder
Jefferson Room

3:30 p.m.- 4:30 p.m. ..... Western Regional Meeting
(Preparing for 1981 Conv.)
President's Room

FRIDAY — JULY 18, 1980

8:30 a.m.-12:00 noon ..... Auxiliary Center Open
Jefferson Room

No Auxiliary Activity Scheduled

PROPOSED AMENDMENTS TO THE GUILD BYLAWS JULY 1980

The following material shows the proposals submitted to the Bylaws Committee as amendments to the Guild Bylaws and Regulations which affect the examination procedures.

This information is being distributed to all members now in order that every one will have an opportunity to study the proposals well ahead of the Council session this July in Philadelphia.

NOTE: Amendment #11 is offered by the Cleveland Chapter as a substitute for amendment #10 proposed by the Examinations Committee. Under Robert's Rules of Order Revised the correct procedure for handling a substitute is as follows:

1. Full discussion, and amendment of any part of #10 (Examination Committee proposal) until the proposal is as satisfactory as the council wishes. NO VOTE IS TAKEN ON ADOPTING #10 AT THIS STAGE.

2. Now #11 (Cleveland Chapter proposal) is discussed, and there may be amendment of any part of #11 until this proposal is as satisfactory as the council wishes. NO VOTE IS TAKEN ON ADOPTING #11 AT THIS STAGE.

3. Now both proposals may be briefly reviewed. This gives everyone another opportunity to make further changes which may be advisable in view of action taken under above paragraphs 1 and 2.

4. When both #10 and the substitute #11 have been fully aired and amended to suit the council, the decision is made on which proposal is considered best by the voting members.

   a) A vote is taken on whether the substitute #11 (Cleveland Chapter proposal) shall take the place of #10 (Examinations Committee proposal).

   b) IN FAVOR OF THE SUBSTITUTE: If the council votes in favor of the substitute then #11 supercedes #10. The Cleveland Chapter proposal stays on the floor and the Examinations Committee proposal is removed.

   c) OPPOSED TO THE SUBSTITUTE: If the council votes against the substitute then #10, Examination Committee proposal, remains on the floor and #11, Cleveland Chapter proposal, is removed.

5. Whichever of the two proposals has been approved is now the only subject for final consideration by the Council. It can be reviewed again and amended again, if desired.

6. The vote is now taken to decide what action the Council wants to take on the proposal still on the floor. The Council may adopt, defeat, refer to committee or board, postpone, etc.

about the new exam...

PROPOSED BYLAWS AMENDMENTS ON EXAMINATIONS

#10 EXAMINATIONS AND TESTING

NEW STANDARD TUNING TEST

Offered here are two proposals. One is the proposal for a new uniform tuning test and supplementary supporting material covering how the test is given and how graded. This has been developed out of the Examination and Standards Committee Reports. The other is a proposal by the Cleveland Chapter presented as an alternative. Please be sure to examine both proposals and accompanying remarks.

A) Examinations and Standards Committee proposal:

This Committee proposes a Uniform Tuning Test, uniformly administered and graded so that there will be an overall level of competence for everyone accepted for membership in PTG. The test has been developing over the last three years and most members have some familiarity with it. To put into place as PTG's Tuning Test, the following amendments are proposed:

Amend Bylaws: Article IV Sec 2 . . . delete a), b), c) substitute a new a) and b) and reletter the rest. Substitute:
a) If the application is accepted by the chapter, an examination of the applicant must be given by the chapter examining committee and/or National Certified Tuning Examiners at chapter level and/or at approved Regional Testing sites in accordance with PTG Council approved examining and grading procedures without exception or deviation.
b) All Technician applicants shall take the Council approved written examination of technical problems and the Council approved bench test under chapter examining committee supervision. The Tuning test shall be given by three examiners at least one of whom is a National Certified Examiner, at an approved Testing site or at a chapter level if the conditions of location, instrument and equipment meet the specifications required in the testing procedures as approved.

Amend Regulations by addition of Article IV STANDARD TUNING TEST QUALITY FOR MEMBERSHIP
A) This test will be administered by a Standing Committee called: Examinations and Test Standards Committee, under the supervision of the Executive Board.

B) The test can be given only by Certified National Tuning Examiners.

C) It can be given at committee approved sites where basic requirements are met. These sites can include Certified Test Centers, Conventions, Seminars and other group or regional meetings and Chapters.

5) If one of the Certified Examiners is visually handicapped, there must be a non-handicapped examiner present.
6) Three recognized top technicians must agree on the sample tuning.
7) Test site may be at a National convention, a group or regional seminar or meeting or at a chapter.
8) Where facilities are limited and/or Examiners are in short supply, a National Test Site can be approved.

I) The Applicant should:
1) Be screened for membership by the chapter as required by the Bylaws.
2) Chapter should administer the bench test and written test.
3) Chapter should attempt to find the level of tuning competence informally in advance so that applicant is not put to unnecessary expense and inconvenience.
4) Application to take tuning test should be made to a convenient testing site.
5) Location, dates and times of testing should be circulated every month to chapters through the home office.
6) Applicant must pay a test fee to cover costs of administering the test.

J) All procedures for actual preparation and administering the test follow in Committee Prepared "Examination Manual".

* * * * * * * * * * * *

#11 CLEVELAND CHAPTER PROPOSAL:

The Cleveland Chapter submits the following commentary and proposal:
This Proposal takes into consideration the following facts:
1) A growing criticism of certain aspects of the Sanderson-Coleman test as it is, involving: a. grade levels; b. method and c. membership growth.
2) Still to be developed logistic-mechanics of test centers.
3) Developing estimate of rising costs to administer such a program.

This proposal will combine the best of what we currently have with the best of what is being proposed and allows to a gradual and planned ultimate acceptance and universal use of the Sanderson-Coleman test.

In brief, this plan will use the Sanderson-Coleman test to qualify "Certified Examiners": provide for their re-examination and qualification periodically and require that a "Certified Examiner" be in charge of every chapter examination. Chapter tuning exams will continue to be as per current requirements.

The purpose of this proposal is to upgrade the standards of the Piano Technicians Guild's entrance examination. This will, through the training of chapter examiners, raise the standards of all technicians. Present members will upgrade their skills in a natural and uniform manner through discussion and comparing fine tuning.

D) In administering the test, all the procedures outlined below must be followed in every case so that all tests will be given fairly and the results will be comparable.

E) The Examinations and Test Standards Committee Requirements:
1) A standing committee appointed by the President with the approval of the Executive Board. The President shall designate the Chairman. President and Vice President are Ex Officio Members.
2) All members must be Certified National Examiners except the Ex Officio members.
3) Starting in 1981, no member may serve more than three (3) years consecutively. One new member must be appointed each year so there will be a staggered term.

F) Duties of the Examinations and Test Standards Committee:
1) Recommend to Council for approval any changes in tests and/or procedure. This includes Tuning, Written and Bench tests.
2) Administer the National Certified Examiner pool.
3) Recommend candidates for this pool to Board.
4) Approve all testing sites.
5) Set reasonable test fees subject to Board approval.

G) National Certified Test Examiner Qualifications and duties:
1) They will administer and grade the tuning test.
2) To qualify as National Certified Test Examiner:
a) Be an aural tuner
b) Pass the Test at 90% or better.
c) Successfully complete instructions in handling the required measuring equipment and computer, etc., used in the test.
d) Sign consent to serve as examiner and indicate willingness to give the time needed to oversee exams.
e) Be recommended by the Exam Comm. to Board for approval.
f) Be approved by a Board majority.
3) Examiners will receive a stipend to cover personal expenses if they are required to travel over 50 miles and/or spend more than one day for the testing. Stipend to be determined by site costs and income from test fees.
4) No National Certified Test Examiner shall advertise that he is an Examiner.
5) Certified Examiners must be recertified at regular intervals, every five years.

H) Test Sites must meet the following requirements:
1) The facility must be available for uninterrupted use for the period needed.
2) A good quality six foot grand piano available.
3) Necessary supplementary equipment, calculator and measuring device, must be available.
4) There must be three Examiners, at lease one of whom must be a Certified Examiner.

New members will find the entrance examination given in a manner that will be fair and indicitive of the high quality of our profession.

The tuning of a piano is a subjective art and is not always a mathmatical absolute. A well tuned piano must be musical and acceptable to the high standards of fine craftsmanship. This proposal raises PTG's tuning standards but does not hinder the availability of an entrance examination for new members.

The proposal is as follows:

1) All chapters must have at least one (1) card carrying certified national examiner.
2) Certification cards must be renewed at least every four (4) years.
3) To renew or obtain a Certification to Examine card, a registered craftsman must spend one day in classroom conditions with other examiners, going over, discussing and comparing all aspects of the three parts of the entrance examination. Plus, taking the calculator type tuning test and scoring at least 85%. This test will be discussed and places to improve will be shown to the examiner by the national examination committee.
4) These sessions to obtain or renew certification cards to examine should be treated financially by chapters as they would be a national council session.
5) The sessions will be in conjunction with state, regional or national conventions.
6) The national examination committeemen who will conduct these sessions will be financially reimbursed as a board member for the actual days of each session.
7) All expenses to conduct each session will be paid for by the national guild, through the approval of the treasurer and within the budget of the examination committee.
8) All entrance examinations for guild membership must have at least one (1) certified card holding examiner at every examination in conjunction with existing PTG rules.
9) Home office will keep a permanent record of all certified examiners and will inform all card holders one year in advance of when their certificate is due to be renewed.

10) No examination for membership will be accepted without one certified examiner of record listed on the application.
11) All chapters will have one year grace period from July 1980 to comply with this proposal.
12) The examination committee will review and/or upgrade the total test periodically with council's approval.
13) A certified examiner must be an aural tuner because they can examine both aural and visual tunings.
14) A certified Examiner must be chapter sponsored.

* * * * * * * * *

#12 EXAMINATIONS AND SERVICE STANDARDS COMMITTEE

Nebraska Chapter requests that the following be placed on the agenda for discussion. It offers no recommended amendments.

"The Nebraska Chapter of the PTG feels that the Examinations and Service Standards Committee should investigate:

1) Development of written and oral examinations for all franchised classes of membership, apprentice and student.

a) such examination for apprentice and registered technicians should not be of the true and false variety, but should be of multiple choice with possible essay questions and more than one master exam available for each classification.

b) revision of bench test - - upgraded for registered technician, and the possible inclusion of a bench test for apprentices.

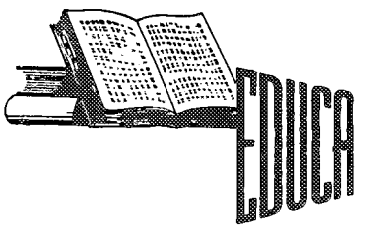
c) the development of a short, 15-25 multiple choice question test for student and new members covering the general PTG organization excluding affiliates, associates, music dealers allied tradesmen. Example: Who may use the PTG logo? or Who may advertise membership in PTG? or What is the purpose of the Council, the National Institute, The Executive Board, the PTG? or Who does a delegate represent?, etc.

d) the development of a manual for new members, explaining: Testing procedures, classifications, general rules of PTG, history, goals, and procedures of PTG, dues, publications and benefits.

2) Expanding classifications of membership:

a) example: Certified Technician - - one who attains 70-80% on all exams, any advertise as Certified Technician and pays same dues as Registered Technician, is franchised.

Reason: We feel (Nebraska Chapter) these additions would help serve our growing membership better; help set professional standards for our trade, which is compatible with new tuning test.



The New Tuning Examination

by

Don Morton, Immediate Past President and Chairman of the Tuning Examination and Service Standards Committee.

* * * * * * *

The so-called "New Tuning Test" is a much discussed subject among Guild members these days and rightfully so since it represents considerable change from the original method of examining an applicant to determine his or her ability to tune a piano.

Since the Guild beginning, the Tuning Examination has consisted of the simple system of having a prospective member tune a piano - whatever happened to be available - with one or more craftsman members (RTT's) to evaluate the results. Due to several variables, such as the condition of the piano and the personal judgement and attitude of the examiner, this type of examination has not always been of equal standards. Throughout the years, there has been much criticism of this non-standardized form of testing both in and outside the Guild. Because of this recognized inequality, the Guild has made many attempts to come up with a more uniform and better regulated type of examination. Committees and individuals have worked on the problem with some success but in the end the decision always rested heavily on personal judgement.

In the past, personal evaluation was the only method available. Today, thanks to rapidly expanding technology, there is a scientific way to compare one tuning with another on a strictly impartial basis. By scientifically measuring the frequencies of every note and recording these measurements, another tuning on the same instrument can be measured and compared to the original tuning. For the past two years, a research and development team has conducted over two hundred (200) tests using this method of evaluation. The pianos used were in most cases top brand names measuring six feet or larger. The first tuning referred to as "The Super Tuning" was done by three or more technicians tuning orally who had to agree on each and every note that the tuning was the finest they could do. The "Super Tuning" was then recorded note by note on a Texas instrument number 59 and stored in one of its memory programs. The piano was then slightly de-tuned by one or two beats; then re-tuned by the applicant. Finally the applicant's tuning was recorded on the TI 59 which automatically compared this tuning with the previous "Super Tuning" showing which notes and by how much the two tunings varied.

From this experience we have gained valuable information, not only on the merits of this type of examination but also on the average degree of excellence of registered Guild members. For instance, 70% of the RTT's taking the examination passed by a grade of 80% or better. Those of us who have been heavily involved in the development and supervision of these tests feel we have now determined the average quality of tuning as performed by RTT's of the Piano Technicians Guild.

From this experience, the Guild now has a choice of adopting a uniform standardized tuning examination or continue with the current method of evaluation by personal judgement. The following excerpt from a letter written February 23rd by Charles Huether to the Guild Board states very clearly and concisely the points to keep in mind concerning this method of testing.

1) This tuning test is NOT a program to develop the one best way to tune a piano.

2) This tuning test is NOT a program to prove machine testing superiority.

3) This tuning test is NOT a program to develop a class of super tuners.

4) This tuning test is NOT necessarily a program to make it more difficult to become a member.

This tuning test IS an attempt to develop a test which will be given uniformly all over the country. It can be measured and graded exactly the same all over the country. It is the closest thing we have to a uniform test. The results will be that those who pass the test will have a minimum uniform level of competency. Whether we replace that uniform minimum level depends on what Council accepts as a passing grade.

The passing grade on the new method is set to coincide with what has been statistically proven as the same or equivalent 80% level we have been applying so loosely in our present testing procedures. Whether we should make passing more or less difficult is an entirely different story and should not be confused with the basic purpose of this testing procedure which is:

"A uniform test which will be administered all over the same way and graded in the same way because of the detailed controls which have been developed. The result will be a uniform minimum level of competency of all those who enter the Piano Technicians Guild after passing this test and REMEMBER - - - present members do not have to take the test. We are not re-testing membership. All of the present members, from the best to the worst, are still members. This is just a change of testing procedure for new applicants."

In order to help clarify details and methods of implementing this program, all who are interested are invited to attend an open meeting to be held at the Benjamin Franklin Hotel in Philadelphia immediately before the opening of the Council session.

Letters . . .

Dear President Russell,

A proud "thank you" to you, all the officers, the Executive Board of Directors, and all the membership of the Piano Technicians Guild for granting me the honor of Guild Sustaining Membership.

This honor has meant more to me than any other honor. I sincerely appreciate it. I must say once more that if it wasn't for the Guild, I wouldn't be where I am today.

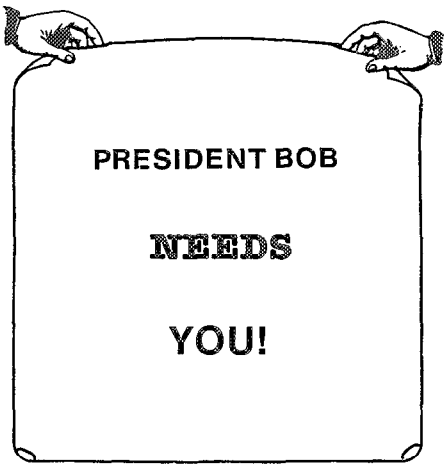
A fond "hello" to everyone and much success to all of you.

Sincerely,
—Ralph A. Kingsbury,
Past President

★ SPECIAL THANKS! ★

The Guild sends special thanks to KENNETH CARLOCK and RALPH A. KINGSBURY, longtime members, who have donated a large number of back issues of the Journal to help complete the Guild library.

We are most appreciative, and welcome donations of back issues to help complete our records to make them available to others who request the older copies. □



If you have a special interest in any one of the Guild national committees, now is the time to let your Board know about it. Your Guild needs committee members who have talents and abilities — plus willingness to give *time* and *attention* to the job. Appointment to a national committee is an honor and everyone in the Guild appreciates top-quality work by our committee members.

Please send your name, address and telephone number to BOB RUSSELL, Guild President. He will coordinate all requests and assemble a list of those who are interested in Guild committee work. The final selection is made by the newly-elected president of the Guild with approval by the Executive Board.

Those members who are appointed to committees will be invited to a special session at the Philadelphia convention to review and discuss committee duties and procedures. The place and time of the meeting will be announced after the later and although it will not be a breakfast meeting this year, coffee will be available during the session. □

THE MINUTES OF MEETINGS AND BOARD SESSIONS

MINUTES SHOULD INCLUDE:

1. Kind of meeting — regular, special, adjourned regular, adjourned special, organizational.
2. Name of the chapter and national organization.
3. Date, time, and the place of the meeting unless always the same.
4. Fact of the presence of the regular chairman and secretary. If either is absent, the name of the substitute is recorded.
5. Disposition of the minutes of the previous meeting, and the date, if other than a regular meeting: i.e., approved as written; approved after correction (quoting the corrections); postponed, etc.
6. a. All main motions and motions to bring business again before the assembly (except those which were withdrawn) and whether they were adopted, defeated, postponed, referred, laid on the table or disposed of in some other way.
   b. The wording of the motion in the form in which it was adopted or otherwise disposed of.
   c. Usually, in the case of important motions, the name of the mover.
7. All points of order and appeals (except those withdrawn) and whether they were sustained or lost or disposed of in some other way, together with the ruling of the chair and the reasons for the ruling.
8. The hour of adjournment.
9. Signature of the secretary or secretary pro tem. The words 'respectfully submitted' are not necessary.
10. After approval the word 'approved' with the secretary's initials and date. The president may also sign if the society prefers both signatures.

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FURTHER INFORMATION ON MINUTES:

* If the register of members is called the names must be entered in the minutes.
* On a ballot or counted vote the number of votes on each side should be recorded. On a roll call vote the names of those voting in favor or opposed and of those responding 'present'. Sufficient names or votes must be recorded to show that a quorum was present.
* Motions to amend, commit, postpone, table, etc., are recorded as the method of disposition for the motions shown under item 6 above.
* Minutes may include additional information on the business provided the procedure does not conflict with a higher authority.

THE 1980 DUES BILLING

Delinquent dues notices have been mailed to members who have not made a payment on their 1980 dues. Duplicate copies of all billings are on file.

Some members say they did not receive the first billing. All whose dues were paid up through 12/79 were mailed the 1980 dues billing December 5th.

The December billing was mailed in a manila envelope which contained the Guild Bylaws and the new Membership Services Handbook. Any returned for change of address have been remailed.

Chapter Notes . . .

Please remember to include the home office on your chapter newsletter mailing list. All newsletters are reviewed by several departments, then forwarded to Technical Editor Jack Krefting who adapts available technical information for his Journal column, the Technical Forum.

. . . **The Connecticut Chapter** is rebuilding a Sterling grand and schedules "mini-technicals" when the chapter works on the piano. In February, member Wally Brooks gave a session on hanging grand hammers as a preliminary to the actual mounting of the hammers when the proper time comes.

. . . **The Washington, D.C. Chapter** is preparing the technicians of the future with an introductory class for anyone interested in learning about the field.

They also run a telephone answering service for the chapter and report that in 1979 they had 429 telephone calls with 215 resulting in business. The chapter has already purchased a programmable calculator and printer to be prepared for the new tuning exam when it is approved.

. . . **The New Jersey Chapter** included a series of book reviews during its February meeting. Jeff Seise reviewed "**Pianos and Their Makers**" by Alfred Dolge, which covered many of the people and companies responsible for early manufacturing and sale of pianos. Bill Marciano reviewed "**The Anatomy of a Piano**," and Charles Huether recommended several books, including the Guild's own "**Membership Services Handbook**." He also covered the "**Dynamic Scale and How to Tune It**" by Feester, "**Horns, Strings and Harmony**" by Benade, "**The Piano**" by Gover, and "**Playing Piano for Pleasure**" by Cooke.

. . . **The Indy 440 Chapter** uses special hands-on sessions for training their student and apprentice members. They are pleased to have "such an influx of new people who are taking their part in the piano business so seriously."

. . . Featured in the **Portland Chapter** "Sounding Board" was an article called the Tool Box. Randy Potter began, "I have two main tool boxes I use on each call. One I carry into the house, the other I drive to the house." His subject was insurance. After discussing his coverage and how it was chosen, he closed with his plans for next month's article on the other tool box, "The one you carry into the client's home and leave unattended in your car."

. . . **The San Francisco Chapter** has presented a technical program on running an efficient small business. Shawn Skylark explained simple but complete systems for bookkeeping, customer files, estimate forms and inventory. He also discussed establishing priorities so that one ends up with the type of business doing the type of work that one wants.

. . . **The Western Michigan Chapter** presented a lesson in history with a reprint of a 1961 "Do-It-Yourself Tuners" article which appeared in Living magazine. Seems they suggested using a tool which was a ¼" Allen wrench (37¢) with a ¼" socket (79¢) reversed so that the ¼" square was exposed for gripping a tuning pin. Naturally they were selling the tool for $3.95 — a nice profit for a method sure to damage your piano.

. . . **South Bay Chapter** planned the March program around member Isaac Sadigursky. Isaac emigrated from Russia six years ago and was to speak on his experiences as a technician in that country. Weather permitting, Isaac was to bring a Russian-made piano to the meeting for everyone to examine.

. . . A bit of philosophy from the **Pomona Valley Chapter**: "Business is what, when you haven't got any, you go out of." □

FLEA MARKET

We have 10 chapters who have responded in "great style" to the participation in the FLEA MARKET — Hurry and add your wares to help your chapter treasury grow and grow! Reserve your table now.

YES!

WE plan to participate in the FLEA MARKET at the 1980 Convention.
We are going to sell the following item(s):

_____

_____

Reserve a table for our chapter/Auxiliary project.

_____ Chapter President/person responsible

_____ Name of chapter

PLEASE RETURN TO THE HOME OFFICE