PIANO TECHNICIANS
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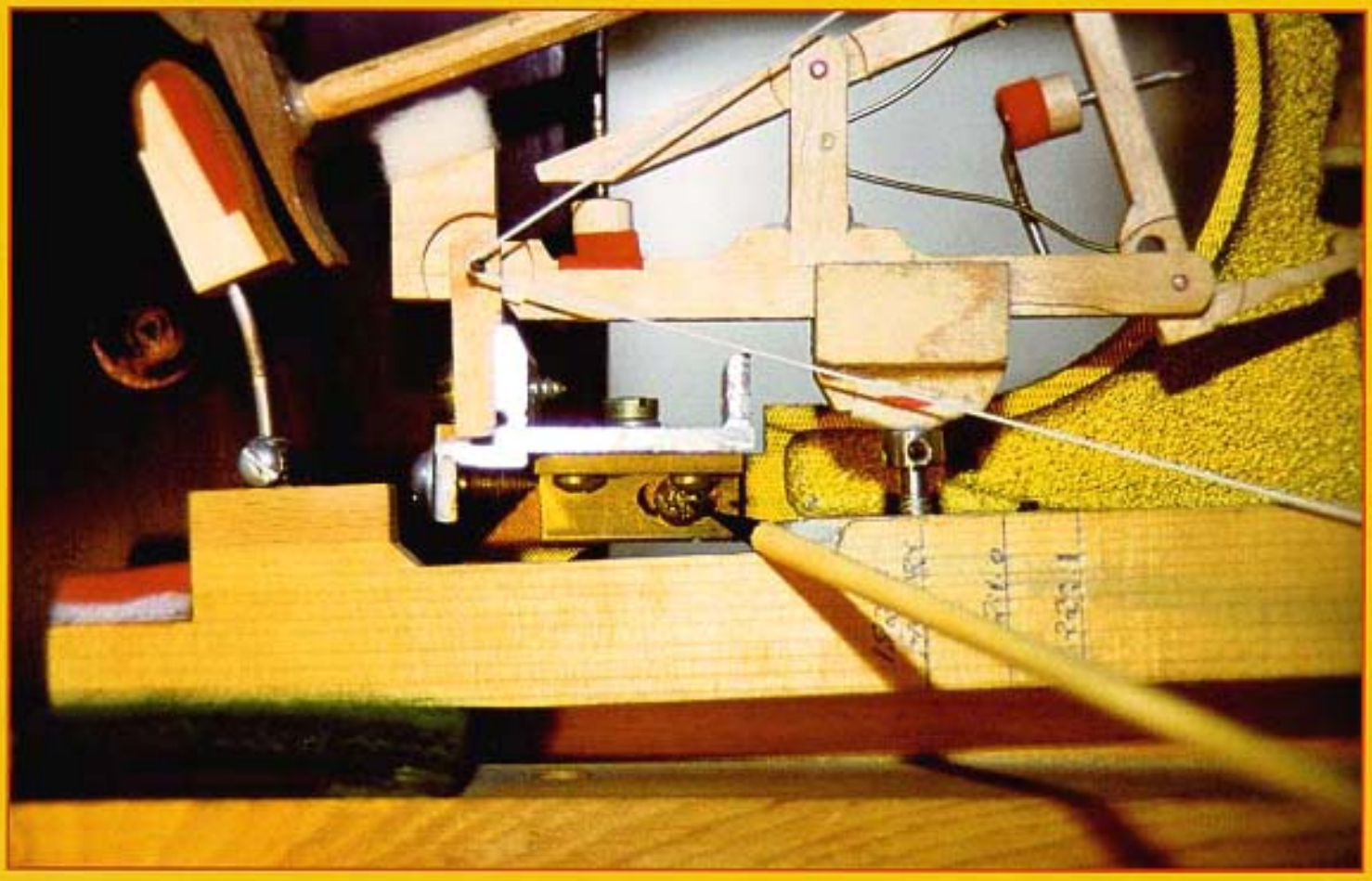


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EDITORIAL PERSPECTIVE

One Thousand Mistakes

Long, long ago, in a place far away from Seattle, I was told by someone who seemed to know what he was talking about, "There is no 'royal road'. Before you master this skill, you will have made one thousand mistakes." The skill in question, I recall, was learning to speak a foreign language. But I think the rule of thumb probably holds true for mastering piano technology or any number of other skills.

Just two weeks ago, I was reminded again that I still haven't mastered every nuance of this business. I had been working for a month completely rebuilding a Mason & Hamlin action for a long-time client, an elderly woman. We'll call her Madame P. When I first picked up the action to take it to the shop, she gave me the requisite deposit and informed me that her son would be paying for the job. "So you'll make the final invoice out to him," she said. That was when I made mistake number 923. I didn't say, "So naturally, you'll have him send the money to you the week before I bring the action back." What I said was, "That's fine, I'll make the invoice out in his name."

Steve Brady, RPT
Journal Editor

When I returned the action two weeks ago, I spent several hours regulating and voicing and making sure everything was nice, then I prepared the final invoice, made out in her son's name as she had requested. "Now," declared Madame P, "you will need to send this to my son *in Missouri* (emphasis mine), and he'll send you a check."

"But," I protested, "my policy is to take payment in full upon delivery."

"But I had no idea that was your policy," she replied.

We determined to call her son (Mr. P, of course) and find out if there was some way to expedite the payment.

"What if *I promise* to send you a check this evening?" he asked. (Emphasis mine.)

"That would be acceptable to me," I somewhat gullibly replied. That was mistake number 924. What I should have said was, "What if you promise to wire the money to your mother's account this afternoon, and she writes me a check which *I promise* to hold until tomorrow?"

I don't know about you, but I do like to be paid promptly at the end of a big job. I learned long ago, back at mistakes 357 and 476, that once you relinquish possession of the customer's property, you relinquish practically all control and leverage in the situation, and may have to wait for weeks to receive your payment.

So I waited for Mr. P's check. And I waited. Finally, over a week later, the check arrived. The postmark on the envelope was three days after the day I spoke to Mr. P. Hmmm ... so much for "promises." To make matters worse, since the check was from out of state, the bank teller informed us that there would be a hold on the funds for a few days! Mistake 924 was beginning to look more significant than I had thought.

I wish I could say that the story ended with us finally gaining real possession of the money and with Mrs. P calling to apologize and tell me how much she was enjoying the new action. After all, the money may keep me *doing* this work, but the grateful appreciation of my clients is what keeps me *enjoying* it. We did finally get to use the money, and Mrs. P did call, but she called to complain.

"I can't hear any tone on the top three notes. Oh, and lower down, there are one or two notes that keep ringing," she said.

Okay, I thought, she's pushing 90. I bet she's losing her hearing in the upper range. I found out long ago (mistake 511 or 512, I can't remember now) that elderly people will often lose the ability to hear the musical tone in the very top reaches of the piano keyboard, hearing instead just a wooden knock. And I'll bet the "ringing notes" a couple of octaves down are the first two notes after the dampers stop. Accordingly, and because

Continued at top of Next Page

Please submit tuning and technical articles, queries, tips, etc., to me:
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Editorial Perspective

Continued

I was still a bit miffed at the payment fiasco, I told her: "I'd be happy to come over and check those things out for you. But would you mind doing something for me first?"

"Yes," she said, "what can I do?"

"I'd like you to go downstairs and try the piano in the lobby. See if you can hear any tone on the top three notes."

"And why is that?"

"Because I've found that many people, as they age, lose their ability to hear piano tone in the top octave." Mistake 925. Undaunted, I continued, "And if you are unable to hear tone on those notes, please call me and let me know before Monday, and save me a trip." 926.

She didn't call back, so I kept the scheduled appointment. A few seconds of testing confirmed that my bets were correct on both counts, and I asked, "So did you get a chance to try the piano downstairs?"

"Well," she replied a bit testily, "I hardly thought that was necessary. I have excellent hearing."

"Hmmm," I said, plunking the top notes out, "they sound fine to me!" How does one prove this to a disbelieving client? Someone whose doctor has told her that her hearing is excellent, but neglected to add "for a 90-year-old!"

I spent a half-hour filing and juicing the bejeebers out of the top hammers, and pointing out to her that the dampers only went up to E, and the F and F# naturally are going to sustain noticeably if you plunk them out like this, but they shouldn't be a problem (especially now that I've voiced them down a bit) in actual playing. After the lacquer had dried, she admitted to being able to hear some tone now in the top notes, but "they all sound the same pitch." I told her the truth — that the pitch was fine — and I think the fact that her hearing was not, in fact, "excellent" seemed to be sinking in. She thanked me for my "labor," and we parted, still, somehow, friends.

Our work partakes of many disciplines: mechanic, tuner, woodworker, psychologist, and sometimes "midwife" through the bewildering passages of a client's life. I sometimes wonder why we never learned all this in tuning school, but then, after an experience like this one, I'm faced with the realization that even a PhD in piano tuning and "allied arts" could never anticipate the variety of situations we're faced with in even a month's time. And so, we make mistakes. And so we learn. At this rate, I figure I'm only a couple of years away from mistake 1000, and then I'll know it all! PJ

FEATURES

COLUMNS & COMMENTS

DEPARTMENTS

IN ADDITION

COVER ART

This month's cover shows a close-up of Richard Davenport's adjustable grand action model, used in the touchweight experiments described in Mark Stern's article beginning on Page 22.

PIANO TECHNICIANS
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What Makes a Piano Truly "World Class"?

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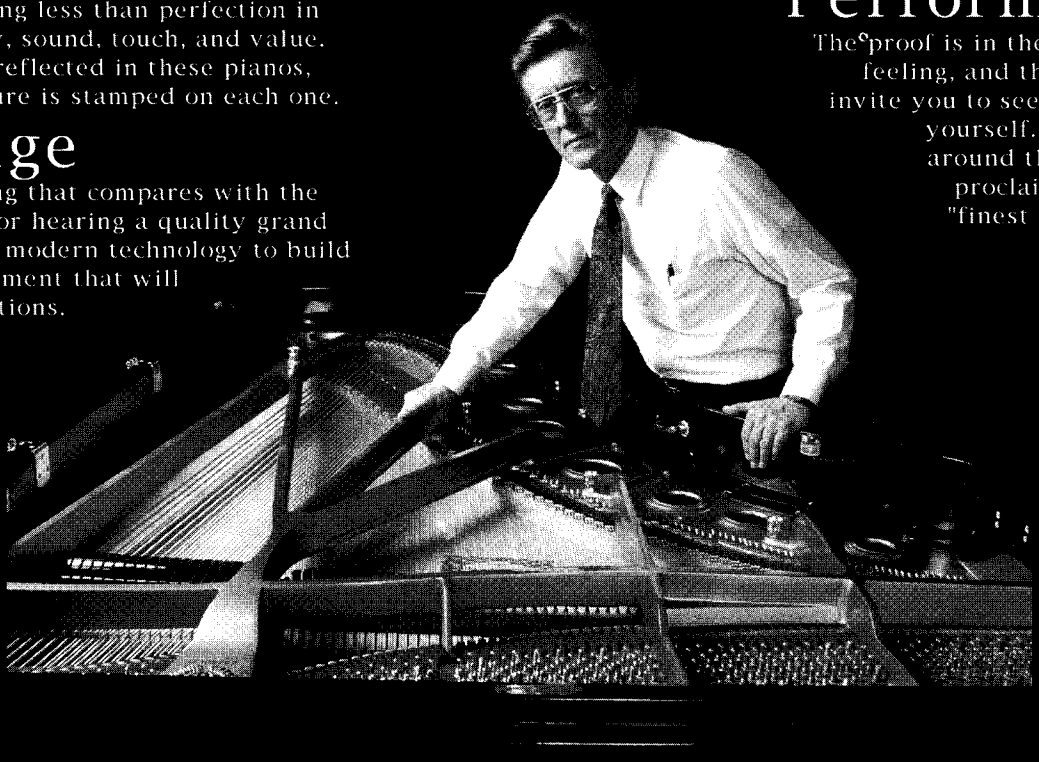

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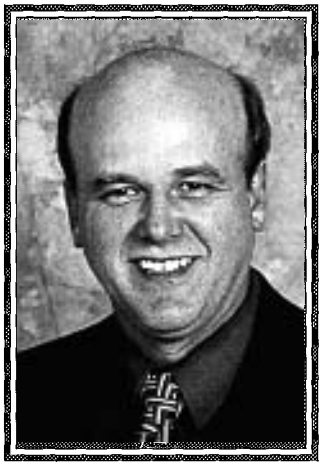
Focusing on the Future

The question is not "Are you an RPT?" The question is "Have you taken the tests lately?"



David P. Durben, RPT
PTG President

I first took the "RTT" exams in 1979. Yes, I was a "grandfathered" RPT. I've always felt that the exams as given to me were neither standardized nor comprehensive. There were too many judgment calls based on unwritten, vaguely described standards, and it seemed like as much a test of my intent, as it was a test of my ability.

Now I know that this was not a universal experience, and I know that many exams given then incorporated much of what is in the exams today. But what I would like to point out is that today's exam holds tremendous value for all of us, Associates and RPTs alike.

So why would an RPT subject himself or herself to those exams all over again? Good question. For me, there were a number of factors. As the President of PTG, I felt obliged to be current in my certification; after all, if I am supposed to challenge others to do something, I should first be willing to do it myself. Another factor is the idea that in order to make informed decisions about PTG and our standards, I felt a need to see the testing process from the perspective of the examinee; the idea of "walking a mile in the other guy's moccasins." But my overriding purpose was continuing education, for me and for anyone else who might be moved to take the tests by seeing someone else set an example.

See, I believe that the RPT exams have a far greater value than the mere measurement of an individual's skill. And my beliefs were borne out by my experience with this. In studying for the tuning exam (you didn't think I'd take a chance on not passing it, did you?), I rediscovered a number of interval tests that for whatever the reason had fallen by the wayside over the years. I also actually learned to tune faster! By practicing the regimen of the actual exam situation, I was able to shave some valuable time off of my regular practice.

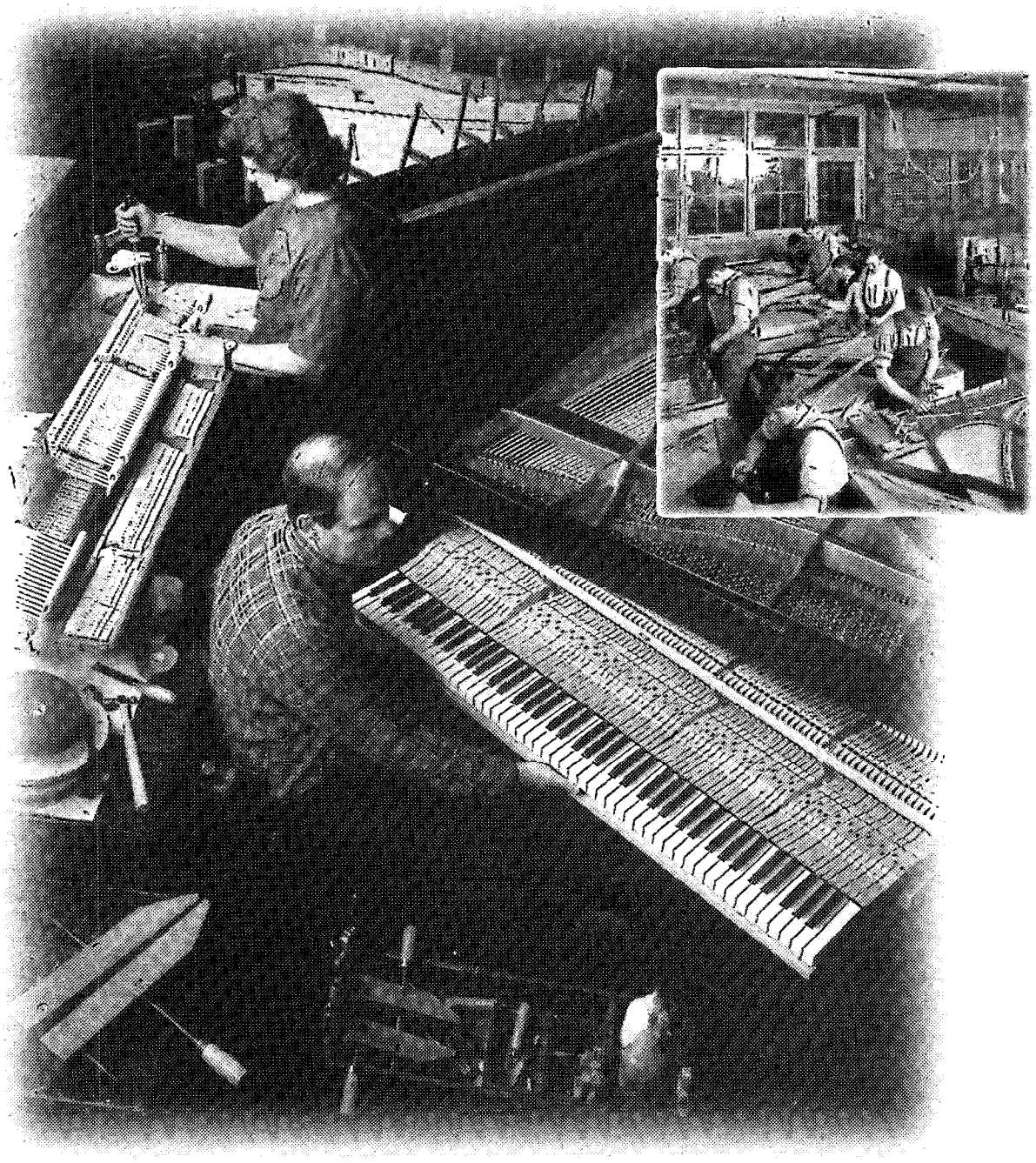
My experience with the technical exam was a little different, in that I seemed to be able to perform those tasks in far less time than was allowed. I guess that means that I'm better suited for bench work than I thought; but it also might tell me that some skills that I take for granted are not so universally enjoyed, and so when we make decisions regarding classes and other educational offerings, I need to keep that in mind.

Which brings us to a benefit of the exams that was brought to my attention a couple of years ago by our esteemed *Journal* editor, the inimitable Steve "I remember having a life once" Brady, who pointed out the fact that our exams are a valuable measure of the success of our educational offerings. So, from that perspective, we learn from the very people we are testing. Fascinating, isn't it?

And to answer the first question everyone asks when I tell them I took the tests again, yes, I passed.

David P. Durben

In Touch With Technicians for More Than a Century



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Tips, Tools & Techniques

Homemade Workbench Dogs

I'll be dogged if the old ways aren't still the best ways. While working on some large panels I was fabricating for a player case, I was confronted with them moving exactly where and when I didn't want them to go. My answer came from the pages of an antique woodworker's journal on the application of dowel "dogs" to hold down the workpiece. Grabbing some dowel stock, I cut it into eight-inch segments and lightly coated the sides with beeswax. A few strategically placed holes drilled into the work surface of my bench and I was set. Driving the dowels just slightly into the holes gave me a tight and firm barrier with which to secure the ends of the piece I was working on. A few more and the job was secured as needed. Once the job was done I popped the dogs out with a few carefully placed hammer blows, and put them away for another day.

Variations on the theme: Put a round peg in a square hole. Use tapered dowel stock. Drill a hole through the top of the dowel an inch or two from the top to allow insertion of a metal rod to help remove the dowel.

—Bob Bartnik
Reprinted from The Richmond Update, *newsletter of the Richmond, VA Chapter*

Grand Action Transport Tip

When transporting a grand action, remove the top action from the keyframe and carry the two parts separately. In addition to lightening the load, there's much less danger that a hammer will flip up unseen and snag a door opening.

—Kent Burnside
Bellefontaine, Ohio

Sohmer Pinblock Problem

I recently faced a new problem replacing a pinblock in a Sohmer grand which had me thinking for quite a while. At the outset it looked straightforward enough, but the more work I did, the more puzzling it became.

My usual procedure is to remove the plate so I can measure the block to see if there is anything unusual to take into consideration. At that point, I could see that the part that butts against the plate flange was just a bit thicker than the usual pinblock plank I get. I figured I could live with that, so I ordered the block. After all, I've had to use shims to accommodate blocks in other pianos, so I didn't see that there was any great problem. When it came, I cut it to size and laid it on the old one in the piano as I usually do to get the flange line. It was when I cut the old one out that the problem showed up. This block was tapered with the stretcher side nearly 1/2" thicker than the flange side at the treble end. In addition the treble end was neatly mortised into the rim. The bass end was another story. This instrument does not have an inner rim running to the front of the piano like a Steinway or other makes. With the treble end nicely fitted there was no way that the bass end could also be done the same way, so they had just chopped out some wood to accommodate it and added an angled dowel to anchor it. What to do?

The solution I chose was to use angle iron supports for both ends. I left enough wood from the old block to make the rim flush and then did a little chopping of my own, not really that crudely but enough to make the angle iron flush with the inside surface of the case. I also had to make a little room for the angle iron on the bottom of both ends of the block so there would be no interference with the hammers during removing and returning the action in the future. I used the plate for the template (is there a better one?) to determine the exact locations of the two angle iron pieces by carefully fitting the block to the plate and having the plate firmly fastened down to both the rim and the block. I used all the plate screws and had the nose-bolts undisturbed so as to leave the down-bearing undisturbed. I also had the angle iron spaces on the bottom of the block done so I could hold them up against the block and mark the sides of the case for my own mortising. That way I didn't have to figure any angles or make any allowances for the differences in thickness between the bass and treble ends of the block.

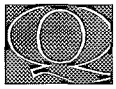
In addition, I added some rather large (3/8" i.d.) furniture bolt inserts, and used 3/8" flat head bolts rather than simply using wood screws. I used epoxy (just to hold the nuts in the wood, but not on the bolts) to encourage permanence, so I don't think anyone will ever have any trouble with them. I may put Locktite on the bolts to discourage loosening from vibration. I have not decided that just yet. One thing is certain; the next time the block needs replacement, it will be much easier to do the job.

—Jim Moon, RPT
Reprinted from Butts & Flanges, *Newsletter of the Cleveland, OH Chapter*

Correction:

Michael Slavin's excellent tip, "Two Ways to Determine Length of Pedal Lyre Braces," on page 10 of the December 1998 *PTJ*, contains two typesetting errors. Step #3 should read, "Drill a 15/64" hole in the other end..." Step #4 should read, "Insert a 3 1/4" length of 1/4" all-thread..." We apologize for any confusion which may have resulted from these errors.

Plastic Parts



Why is the piano industry so reluctant to use PVC or ABS Styrene? Only Kawai has been brave enough to use this material seriously. I commend Kawai for pushing on with this technology almost by themselves. On page 15 of an early Kawai service manual it states Kawai has used ABS Styrene flanges since serial number 395000. According to the Atlas this would be since 1969. Wouldn't 29 years be enough time to remove doubt to some degree?

I have sold and serviced Kawai pianos since 1981. I just can not find anything negative about this material. Lately most Kawai grand and upright action components are all ABS. All shanks are still made of wood. It's likely ABS shanks would flex some and maybe that's why they continue with wood. Block type components such as jacks, butts, wippens, damper levers, etc. are not likely to flex. I've tuned a few Kawais and wasn't even aware of the all plastic parts and never noticed anything negative. Sales people have made snide remarks about plastic for years. Who knows how many sales Kawai lost over this issue.

Kawai makes the Boston for Steinway but they request that Kawai use wood for the Boston. How sad. They probably don't want to be caught on the sales floor with plastic. Are they and we to steep in tradition until their name fades into oblivion?

The new Kawai ABS action is a sight to behold. Every component is exactly straight and in line. No tilting wippens, no tilting jacks, no warping, no shrinkage, no sliding center pins. It's early to know, but I believe there will be less regulating because the material is stable.

— Sy Zabrocki, RPT
Montana Chapter

Clyde Hollinger, RPT: Two things might figure in here. First, there is the stigma plastic carries, that if it's plastic, it's cheap. Second, piano manufacturers have gotten burned in the past by using plastic, Teflon, whatever. It may be just fine to use this PVC stuff, but I can't blame them for being super-cautious when making pianos that may be around up to a hundred years later. A recent post suggested that 29 years should be long enough for us to know that ABS action parts will pose no problem in the future.

Randy Mangus, RPT: Steinway got turned off on "plastic" because of the infamous Teflon bushings. I would not look for anything plastic in a Steinway ever again.

Zabrocki: Randy, Cyrus Field pioneered the transatlantic cable about 1858. The first attempt fell into the ocean and was lost. He tried again. The second one lasted only one month. About 1100 volts burned the wire and it failed. But he and others did not give up and the rest is history. Steinway had the Teflon disaster but do they have to give up that easily? I know it is risky to lean on them but can't we at least talk?

Phil Bondi: Sy was writing about ABS Plastic and its use in pianos. In a former life, I worked for a division of GE that makes Noryl Plastic, a competitor to ABS. (Noryl Plastic is what is used on the exterior of the Saturn cars you see around town.) I won't go into the chemistry, but the main ingredient is nylon, with rubber being a close second. This makes the end product very durable. Also very hard to mass-produce, but we did it!

Sy, I would be very interested to know what ABS product/products are used to mold piano parts. You would have to do some serious investigating, starting with the Kawai assembly process and work backwards from there. I believe ABS is a Poly-Styrene based product. Noryl is a Polyphenylene Oxide-based product or PPO for short.

Mike Jorgensen, RPT: Plastic? I used to be turned off by it too but now I think it's wonderful stuff. I sneered at power tools with plastic cases until I was cutting with a skill saw and went through a 12/2 wire I didn't know was back there. If it had been a metal case, My dear wife might be a widow. Thanks Plastic!

Ron Nossaman, RPT: This is just one of many instances where public opinion is out to lunch. Sales people can extol the virtues of their own product's sometimes arbitrarily dimensioned wooden parts as if the trees involved died for a worthy cause while they wrinkle up their collective noses at the 'plastic' parts the 'other' company uses. "They aren't like us, you know." This works because it plays to public opinion, which is an idiot. In short, I think you're right. Those 'plastic' parts will outlast the rest of the piano and pianos are immortal. Ask anyone.

Conrad Hoffsommer, RPT: Let's not forget the good reputation of plastic fostered by Lester and Rippen. I know it's old news, but the plastic stigma has been around for a long time. Just like urban legends and other "true" Internet stories, it has a life all it's own, independent and regardless of any and all facts to the contrary. Perhaps when everything else is high grade plastic...!

Don Mannino RPT, Manager Kawai Piano Technical Support: Thanks, Sy, for your comments. If I write things like that, people only dismiss it because I work here. Having it come from another source is great. You know, the bulk of the technicians are not against ABS. A few Steinway loyalists speak out against it occasionally, but most technicians have defended the use of ABS.

You are right, ABS is not used for hammer shanks because it would affect the shank / hammer system too much, changing the tone. Another material could be used for shanks (carbon fiber reinforced plastic tubes work great), but this would make it awfully hard to service, and besides, in this location the limitations of wood are not a problem, and wood hammer shanks work very well. Kawai's philosophy is, where modern materials make a better instrument, use them. Where traditional materials make a better instrument, keep them.

You are also right, that some people fall for the dishonest sales tactics of some people selling other brands, and Kawai loses some sales. Showing buyers bags full of the old broken plastic parts from the 50s and telling them that the ABS parts will do this is flat out dishonest.

Mark Skowronek, RPT: Thanks, Don, for your com-

Continued on Page 12

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Continued from Page 10

ments. If Kawai has done any research into carbon fiber or other non-wood materials for soundboards and/or bridges, it would be fascinating to hear about it. A piano that is stable through climatic changes would be wonderful indeed.

Del Fandrich, RPT: One of the major problems with using plastics of any type in any product is that they are often misused. In the piano industry this is largely due to the fact that very few manufacturers maintain adequate R&D and/or engineering departments of their own. Kawai is an obvious exception.

Stephen Birkett: ABS, vinyl, plastic action parts...why stop at that? The hidden revolution of the 20th C. is the material revolution, as significant as the computer revolution, but a real sleeper in the public eye. The development of new materials with specific properties is proceeding at a fantastic rate. There is really no issue when it comes to piano designs - they should be used and to not maintain the R&D to examine this is plain stupid and short sighted (but who said the piano industry is anything but stupid and short-sighted). The only considerations for new materials are:

- cost effectiveness, both for the material and its utilization
- appropriateness in the sense of its static and dynamic mechanical properties
- durability, with no reduction on current materials
- serviceability, ease of repair compared to current materials

Computer models are particularly useful for examining the second point above at minimal cost.

Robert Goodale, RPT: Isn't it interesting how America has this stunning love affair with plastic in all other forms of technology except pianos? Unless there is a generous amount of shiny plastic with lots of LEDs glowing in the background it's almost impossible to get the public to buy computers, cars, radios, electric dish washers. Remember when drum kits used to look like they were made of wood? They still are but you would never know it by looking at them today would you? If I remember my reading correctly, when piano builders realized that iron was the ultimate answer to make a piano stay in tune, for more than twenty minutes, they were still reluctant to use it for many years because the "public" believed that iron didn't have a place in musical instruments.

Willem Blees, RPT: Why use a plastic jack that will last 500 years, when the soundboard and pin block will only last 75 to 100 years?

Mannino: Because during that 75 to 100 years, the ABS action parts will perform more reliably and require less service than if they were made out of wood.

Bob Anderson, RPT: I recently finished replacing hammer and wippen flanges, backchecks, jacks, and damper levers on a 1948 M & H console. For those who may not have tried this, here are some suggestions: If you haven't invested in wire-bending pliers yet, do so. The side-to-side kind is the most useful. The backwards-and-forwards type can also be useful. The recently available parallel reamer sets are great for a $12 investment. I have found them at Schaff and APSCO.

Procedure-wise, my first step was to replace the damper levers. Take out an old one, snap off the part above the flange, and hold it against the new lever while you approximate the bend of the old one. Install the new lever, mount the head, and do a finer bending to match the neighbors. Then cut off the excess wire. Next, I repinned the hammer flanges, using the neighbors and the string cuts as guides. Chucking a backcheck tool into a power drill saved some time in installing the new backchecks.

I should mention that I removed the hammer rest rail, the hammer spring rail, and the let-off rail before doing any work. This action had a metal action rail, and it was more difficult to work with than a wooden one. Action screws don't go into a metal rail easily unless they are perfectly straight and match the threading of the rail. Before turning the screws in, back them up until they ""click"" into the right position. I left the bridle straps disconnected and the keys out of the piano when I reinstalled the action (as well as leaving out the aux. rails). This left easy access for final regulation of the dampers, and for spacing and traveling of the hammers. Then I installed the let-off rail, connected the bridle tapes (making sure that the jack springs were seated), set let-off, installed the hammer spring rail and hammer rest rail, set rest rail position, lost motion, key dip, and damper lift from key.

I think that covers the main items. If I've missed something important, I think I can count on someone to spot it. Installing the action and regulation took 8 hours (there was key easing and misc. minor stuff to deal with, too). This is a nice piano and well worth the effort. It's not easy to work efficiently enough to make it pay very well, but it can be done.

Blees: Instead of replacing the backcheck, the jacks and the flanges, wouldn't it have been much easier, and less time consuming, to replace the whole wippen? Other than that, I liked your descriptions of how you did this job. Congratulations.

Anderson: Replacing the whole wippen was an option, Wim. The cost of a wippen is about 3 times the cost of the jack + flange + backcheck. In my case, I already had the flanges and backchecks, and I wanted to use them. 90 jacks and 70 damper levers cost me $120 from Pacific Piano Supply. Anyway, you have to balance the cost of the wippens vs. the smaller parts, and the time to install the new parts on the wippens, which in my case was about 15 hours. With a different scenario, maybe I would have gone for the whole wippens. Two things swing me to the direction I took: 1) I hate to throw anything away, 2) I find myself doing a lot of repinning of new flanges I buy because they don't fit into my torque specifications. So I had control over #2, and I felt good about #1.

Keith McGavern, RPT: I have done one of these jobs in the distant past, Bob. It was a very worthwhile and rewarding experience for both the customer and myself. I re-examined my records and discovered I took the route you mention, Wim, back in September 1980. Here are the figures:

Damper levers - $40.18; wippen - $95.94; Tax - $5.44; Labor - $80.00

Seemed like a fortune back then to charge that much. What a hoot! That was three years before my initial contact with the Piano Technicians Guild.

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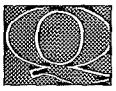
Continued from Page 12

Anderson: The approximate times for replacing various parts were: damper levers -12 pieces per hour; backchecks-60 pieces per hour; flanges & jacks-40 pieces per hour. The whole job, including regulation, took about 24 hours. Incidentally, I charged $700 for my plastic parts job. I would like to have gotten more, but I needed a sitting-down job as I fractured and sprained my left ankle two months ago. So I was willing to underbid it. There certainly are pianos not worth even that much action work, but this one was.

Re-using Old Soundboard Wood in New Boards



I am a piano rebuilder in Barcelona, Spain who has been doing this job for over 20 years, but only in the past two years have I undertaken the task of soundboard replacement. Now I have a complete installation system with a pneumatic rib press and everything to do this task properly.

Why is it better to replace the whole soundboard with new wood rather than carefully withdraw the old one, unglue the ribs and bridges and next re-dry the soundboard and reglue everything into place again? Many customers ask me what I have left of the "Steinway" if I have replaced everything. I must admit now that this question makes more sense to me, since if I completely replace the soundboard of a Steinway it is no longer a Steinway, even if it clearly needed it.

What I would like to know is if there are any known structural changes on wood over time? Are there significant differences between new vs.old wood in, for instance, moisture holding capacity, vibrational behavior, strength, irreversible deformities, etc. Where can I find such information?
For the time being, I prefer to recrown the old soundboard (although ungluing it without damage is like a nightmare), but I wish to know your opinions.

—Josep Puig
Barcelona, Spain

Doug Oliver: Though in no way can my feeble knowledge compare with your years of experience, I may have something to offer. I have done some reading on qualities of old wood, specifically in reference to violin making. As you know, old, seasoned violins are far more valuable than new ones, in part due to the fact that the tonal quality is enhanced by the wood's age. I have read that this quality difference happens on the cellular level with wood, in that the "protoplasm" and "cytoplasm" in the cells turns more resinous with age, and therefore conducts vibrations from nearby strings and through the bridge more efficiently. Personally, I have never heard of removing a soundboard and replacing the original soundboard back in any piano, but if it can be done ... what a great concept!

Dale Whitehead, RPT: I read one response about the cellular composition of wood becoming more "resonant" with age due to the loss of the "plasms" in the cells of the wood thereby making it more responsive to vibration. True, but this loss also indicates that the cell structure is breaking down. Some panels of this vintage soundboard wood may indeed have reached that point where the wood is just at the right point of looseness or responsiveness. However, what happens to that same wood when you once again add the stress of crown and downbearing pressure for another 20 or so years?

It is perhaps a matter of practical engineering that new wood, which can often be of higher quality than the original soundboard material, be used instead of rebuilding dead wood. Why risk the possible structural failure of the soundboard and components when one could greatly increase the chance at giving the customer back an instrument that could go for twenty or more years before needing another rebuild? It seems, some soundboards come into their own optimum resonance with some peaking at a much faster rate than others.

The old analogy of "The Stradivarius" was used, once again comparing apples to oranges. I don't understand why techs do this. I've never heard of a vintage "Strad" being rebuilt with a new top have you?

Don Rose, RPT: I believe that soundboards are a bit different than violins. Many soundboards are compression crowned. This apparently leads to failure of the board when the elastic limits of the wood are exceeded.

Violins are carved into their shape so this is not a factor. I wonder if anyone has ever carved a piano soundboard. Violins generally are thought to require about ten years to "play in". After that they need to be used on a regular basis. At one time Stainer violins were much more highly prized than the Italian ones. They have not stood the test of time nearly so well as the flatter bellied Italian instruments. One wonders if there is a lesson to be had there.

Ron Nossaman, RPT: Always replace the panel and ribs. The old wood has accumulated a lot of years of compression that has damaged the cellular structure too badly to allow its reuse. Wood does not gain 'resonance' with age, it only loses strength and elasticity and becomes less mechanically responsive to energy transfer from the strings. Resonance is not really a factor in soundboard woods anyway, or shouldn't be. The soundboard is a transducer, whose job it is to efficiently convert the strings' vibrations into sound without adding or subtracting anything. That's not entirely possible due to internal friction in the assembly, non-rigid string termination, energy absorption by the rim, etc. At any particular point in the scale, soundboard response is determined by the rib scale, panel thickness, grain angle, bridge placement and stiffness, downbearing, assembly mass, crown, and a little statistical probability drift (dumb luck). The resonant properties of the panel have little to do with anything. A much more important factor is the elastic recovery and load bearing properties of new wood. Replace everything, and machine crown the ribs, whether or not the originals were, so the panel isn't doing all the work of maintaining the crown.

If they want an original Steinway, why are you rebuilding it at all? Never mind that it isn't playable, its sacred originality is still intact as long as no one tries to fix it. If they want a playable instrument, parts are going to have to be replaced. I don't see the recipients of hip replacement surgery crying about the loss of the original joint that made it impossible for them to walk. If they want a good job, it will require upgrading parts by replacement with higher quality components without regard to compromising performance to maintain

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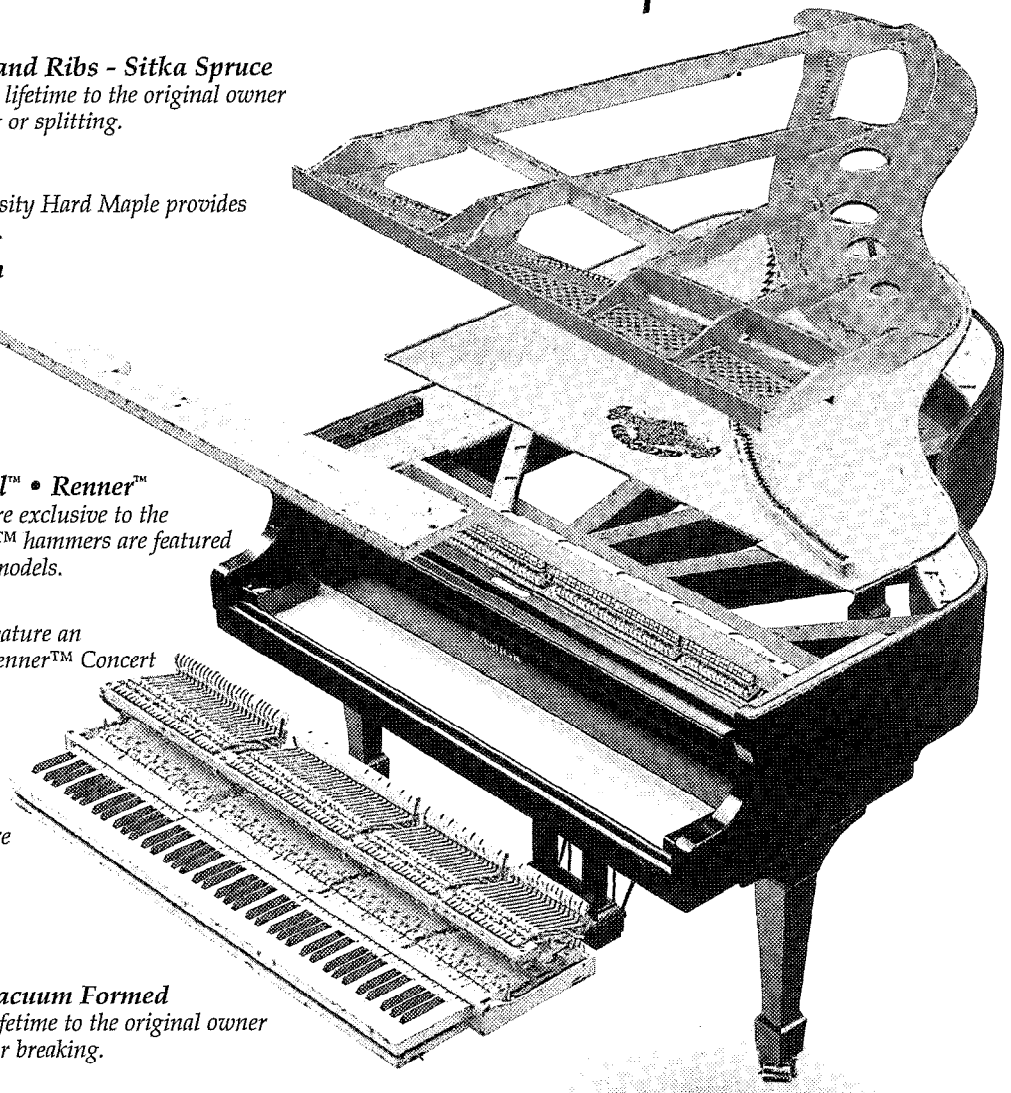

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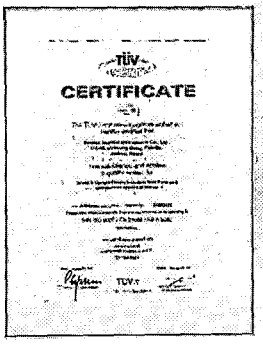

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an illusionary mystique. I'll chose to replace parts if it will improve function. I don't recommend re-crowning the old soundboard. I also disagree with the premise that violins improve with age. How about comparing an old 'Strad' with a brand new one and find out?

The Encyclopedia of Wood, Sterling Publishing Co. and a 1989 reprint of the 1987 revised edition of the Wood Handbook: Wood as an Engineering Material, from the U.S. Government Printing Office are absolutely required reading for rebuilders.

Patrick Draine, RPT: There are two rebuilders in the Northhampton, MA area who were invited to give a presentation to the Boston PTG chapter last winter. Their "specialty" is removing and repairing original soundboards. Operating out of an old factory building with plenty of steam heat, they have refined their procedures for directing steam to the glue joints, loosening things up, and popping the board out. They then fit the board back together and glue it up, and then reinstall it. They did not use shims, which usually resulted in screw holes and bridge positions shifting from their original spots. They brought with them a repaired upright back, and a grand that they had steamed and the board and ribs were "just popped out." This is very different from the mainstream viewpoint which most of the audience held. Being about 100 miles east of their neighborhood, none of us knew whether their customers were (still) happy or not. Nobody argued with them; folks just sort of smiled and muttered "different strokes for different folks."

A few years ago Chris Robinson gave a technical presentation in which he compared a piece of old, repaired soundboard with a piece of new soundboard material. The comparison was done with a monochord copy of the salesman's demo, which all Mason & Hamlin dealers used to have.

Chris had his big Digital Equipment spectrum analyzer, which showed that the new soundboard material generated a fuller band of harmonics (or at least that's how I remember it) than the old piece of soundboard material.

Stephen Birkett: It should be clear that excessive forced crown on soundboard wood can, and sometimes does, damage the internal structure of the wood, especially on 20th-century pianos. Such a soundboard ought to be replaced, of course, in rebuilding. It shouldn't be impossible to detect such damage in determining whether to replace a board. The board on an old piano, let's say perhaps pre-20th century, is quite likely to be in perfectly acceptable condition for repair rather then replacement. No board should be replaced on a historically important piano, and repairs should be done with great care to avoid altering the record. I know a fine harpsichord builder in Amsterdam who has a huge stock of soundboard wood that he has cannibalized from defunct modern pianos. He's actually a little obsessive about collecting it. The stuff sounds great in his instruments.

Steve Pearson, RPT: Strads, and any other old fiddles for that matter, do continue to serve well for centuries. That is not to say, however, that they do not need a lot of TLC along the way. After a hundred years or so, it is common to have fitted a violin with a new bass bar, and wood or parchment patches where the original top has cracked or failed. Antique value makes practical the tons of work that keeps these guys playing. It has to be said, however, that in "blind" competitions, new violins by skilled makers frequently beat out the instruments of the old masters, including Stradivari, Guarneri, and the rest of them. "New" old instruments, like the "Earl of Plymouth" Strad, which was found some years ago, in an uncompleted state (it had never been strung) exhibit the same "stiffness" and require the same play-in time of a brand new instrument. Quality modern instruments are made with old wood, 80-100 years being the minimum standard.

So how does all this apply to piano soundboards? That is unclear, but the kind of extensive work feasible on a relatively simple violin belly would be wholly impractical in a piano. Given the huge tension and downbearing, not to mention the stability imparted by the cast iron frame, the differences are perhaps too great to allow any direct comparison. I recently played a Maggini violin, a Gaspar da Salo viola, and an Andrea Amati cello, all from the late 1500s. The violin and viola were glorious; strong voiced, responsive and carried well. The cello was as dead as the proverbial doornail. Who knows why? A new top or soundboard could make this instrument speak again. Unfortunately, it would also destroy its value. Go figure. The practical string player, who owns such an instrument from a great maker, is often to be found playing a modern copy of their antique instrument, "saving" the old one for posterity. Typically, the new one sounds and plays far better than the original it copies. If you have a heart transplant, are you still you? I would certainly be inclined to think so.

Horace Greeley, RPT: As an affirmation of the above, a certain well-known bay area violinist, who happens to own Kreisler's Guarnerius, actually seldom plays it. He prefers to use a modern copy of that same instrument which he commissioned from a local maker. Further, what with the rich and famous snapping up old fiddles at such a rate as to make them totally out of reach for real musicians, making new instruments has come into something of a renaissance, at somewhat affordable prices. Pity the same thing cannot be said for piano building.

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As you say, who knows what an 80-year-old Steinway sounded like when it originally left the factory. No one has that kind of tone memory, even if they are old enough to have been around back then. I've read a few of the responses you've received that compare this situation with that of the violin. While there is no basis for either acoustical or structural comparison between the two, the same thing applies. I've heard much speculation about how violins "improve" with age. Personally, I doubt that this is the case. Again, who has been around long enough to prove the question either way? I've always attributed these stories to marketing enthusiasm. There are many people who have a strong vested interest in

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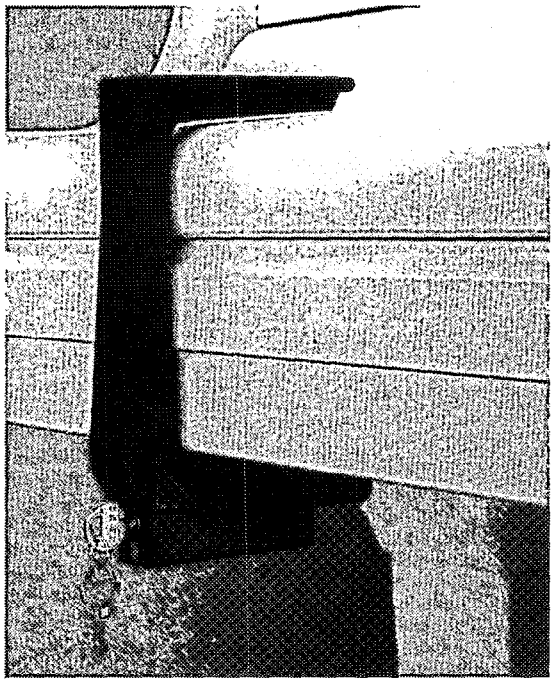

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keeping the value of these remaining instruments very high and going higher.

As may be, all you know for sure is that the piano now has problems. It is almost certain that, no matter what you do now, the remanufactured piano will not sound exactly like it did when it was new. It certainly won't if you rebuild it using the original board, no matter how carefully you repair it. You may be able to make the instrument sound better than it does now, but you will not be able to bring that original soundboard back to its original condition. Even with a new soundboard panel, no matter how you try, you will not be able to exactly duplicate the characteristics of the original. You will not be able to set the original downbearing parameters exactly. Nor will you get many of the other details that go into making a piano sound the way it does. So what? Your job is to deliver back to the customer the best musical instrument possible given the structure and design of the original. And, with an 80-year-old piano that means replacing the soundboard panel and ribs.

Yes, changes in wood do take place. First, you should study the structural characteristics of wood. I do not know what literature is available in Europe. In the U.S. there is a book published by the U.S. Department of Agriculture known as "Agriculture Handbook #72." More popularly, it is called simply the "Wood Handbook." This has much of the information you're looking for. Another very useful book is "Understanding Wood" by R. Bruce Hoadley.

Much of what I have to say about this subject has been published in the Piano Technicians Journal. There was a three-part series on this subject a year or two ago. You should be able to get reprints of these articles from the PTG Home Office. See the PTG PIANO PAGE on the Internet: http://www.ptg.org. There is also an article on soundboard wood in our web site at http://www.olynet.com/users/pianobuilders/index.html

Basically, your results will depend on how the original soundboard was crowned and on how - by what procedure - you now intend to establish crown. I know that rebuilding the soundboard with old wood is being done. I have not yet heard a piano that has been rebuilt in this manner, but it is probable that significant improvements in the tone performance of a piano can be realized if the ribs are designed correctly. I do question if those results can equal the performance of the same piano with a new soundboard panel, however.

Bob Bergantino, RPT: Much of the credit for the tone goes to the type of varnish that was used in the violin's manufacture. The varnish was derived from the trees very high in the Swiss/Italian Alps. Its formula was passed down from father to son, unwritten so who knows what was put in the mix to make the final varnish product. Even analysis of the varnish has not been successful in solving the varnish formula mystery.

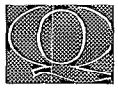
Point of interest: The Strads that are housed under special humidity and temperature conditions at the Smithsonian, are taken out and played in concert every couple of months to keep the wood alive and breathing. Without the play, they would soon die and be rendered tone-dead.

Josep Puig Responds:

First, I want to thank you all for your answers on my old wood/new wood soundboard question that I first introduced. I have had great pleasure reading all of them. They have been very enlightening to me. Although many of you think that this question should be definitely buried in favor of replacing the soundboard with new material, I have seen that there is no general agreement and that the question is somewhat far from being settled. I asked the question because I am just beginning soundboard replacement and I am in need of concepts to be very clear in order to make the best decision.

My conclusion after all your remarks is that the use of new wood for the panel is less risky than the re-use of the old one. I think that re-using the old panel does not necessarily lead to a short term failure of the job done, however, working with new wood gives more predictable results and this is important for your peace of mind. Last, but not least, working with new materials is much more comfortable and cleaner. So, I shall use new spruce in my next jobs but I will also keep gathering information on the subject of aging wood, which I found fascinating. Thanks indeed for all the information given.

Broken Key



I have a client who owns an 18-year-old Ivers and Pond upright that has a broken key. It is broken at the balance rail hole and has been repaired by another person. This person glued the parts back together and glued/nailed a portion of white plastic keytop along one side of the key as reinforcement. This "reinforcement" has cracked under the strain of playing and I am left with the repair job. The question is, would Weldbond be the better glue choice for the repair? And would a piece of ivory keytop (of which I have some) serve as an adequate reinforcement or would it be better to use thin veneer. This is an instrument that is in rather poor condition but it's all the family has and can afford.

— Ralph Black
Nashville, TN

Andre Oorebeek: Usually, you can do a very good and very quick job by preparing two pieces of rather sturdy cardboard. Cut them out with a pair of scissors or a knife. Put fast drying glue on them and also on the two key halves. Put also glue on the actual cracked parts. Glue the carton pieces on both sides of the broken key. Let it dry for a short time. Cut away neatly the remains of the carton not in contact with the key. I have used this method many times over, since it is something that happens quite often.

On the other hand, it would be better to use veneer instead of cardboard, but who carries veneer in his tool kit? A personal business card comes in very handy instead.

Ron Nossaman, RPT: I would guess your biggest problem is getting the @%$#* the last guy used for glue out of the break so you can make a decent fix. Scrape, whittle and curse as necessary to do so, and glue it back together with Titebond™ and a thin veneer (horizontal grain) patch. That

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ought to do it.

Jon Page: The sturdiest repair would be to epoxy the key back together and then lay a piece of fiberglass cloth on the side. Second choice for reinforcement would be veneer, with the grain running horizontally of course. To insure resetting the key in the lateral and longitudinal planes, use the two adjacent keys as splints. Align the bottoms and clamp. A piece of waxed paper between them is a good idea. This way there will be no problem with key height or rubbing.

Roger Jolly: Re-working someone's poor workmanship is always a challenge, but I can offer a simple solution for a broken key. Use CA glue on the end grain and press the break together, pre-tape the sides of the two adjacent keys with PVC electrical tape. You can use the two keys as a guide to ensure that you don't have a 'dog leg' joint. The tape will prevent the keys from sticking together.

This end grain joint will be quite weak, but will be strong enough to allow you to glue and clamp two pieces of veneer about three inches long and the width of the key over the cracks. Sand the veneer to have adequate clearance. I use birch veneer because it's very strong, cheap and white, it matches the cheaper bass wood keys that seem to cause the most trouble. Finally rebush the key, and size the B/R hole if required. You should end up with a perfect fit every time. Sounds a little complicated but it only take's 15-20 minutes not counting drying time.

Bob Bergantino, RPT: This sounds like a perfect place to use CA glue. Reinforce the sides with whatever, but glue the crack, hold it steady and "shoot" it with an accelerator. If you haven't used this yet, this would be a perfect spot.

John Ross: Don't forget CA glue. I use metal tape from car repair, for the reinforcing. It is strong and thin, so filing is not required. I would also recommend the installation of a new button, if the old one is split.

Black: Thanks for the suggestions, John! The response was really quite good. Some ideas I already knew about but yours intrigues me. I went searching for the metal tape at an auto supply store but they had nothing like that and didn't really know what I was talking about. Could you give me some more specifics about it? My son is an auto painter and if I could reach him, he might shed some light on it but he's out for the weekend. The store had some metal adhesive-backed sheets made by the Bondo company. It is adhesive backed with a film over it that you peel off to get to the sticky surface. It will stick well to a smooth surface, but the wood is porous, that is why I use the CA. The CA also goes on the broken joint, as I think it was Newton suggested. Sorry I can't give you a brand name, or even what it is called. The Bondo stuff sounds like it would do the same thing.

McGavern: I have found an item at AutoZone that approximates this metal tape. It's made by Bondo and called "Self-Adhesive Body Patch." There are two small flat sheets that can be cut with household scissors. I just purchased it today and the next broken key I come across is going to be the guinea pig. It looks like it will work great and is thinner than what I have been using. A special "thank-you" to the persons who mentioned it!

David Ilvedson, RPT: I still think the birch veneer is the way to go. It will hold as well as needed and looks like wood! I would use wood glue unless time was a problem.

Rogerio Cunha: When I have broken wooden parts, I have successfully used white acrylic resin used by a prosthodontist. You must first drill a hole in order to anchor the resin. After you mix the powder with the liquid catalyst that comes with it you have about ten minutes work time. After this time the material is too hard.

Elian Degen: I have also used this method for quite some time, especially for fixing broken parts, or filling parts that have been eaten by woodworm. I live in Venezuela and there are some glues to which we have no access here. I imagine that these acrylics are similar to the CA glue described in many posts.

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– Enrique Rosano
Chief piano technician
University of Arizona School of Music

When Enrique Rosano fell in love with the incomparable Steinway sound as a 7-year-old, he couldn't possibly imagine that 40 years later he would be an important part in the purchase of nearly 100 of these exquisite musical instruments.

But as chief piano technician at the University of Arizona School of Music at Tucson, Enrique, indeed, was a key factor in earning this university the highly valued *All Steinway School* designation.

"It's a thrill to be an All Steinway School because I really feel that I'm working with the best," says Enrique, who compares Steinway pianos to finely tuned racecars. "When I prepare a Steinway for a recital, I know its sound will remain fresh and strong from beginning to end. Its consistency and durability are simply beyond compare.

"Each Steinway has its own distinct character that delivers a beautiful, sophistocated, full-bodied sound." And because of his strong appreciation of Steinway quality, Enrique also has become part of history. The university's recent selection of 98 Steinway grand and upright pianos represents the largest single institutional purchase since Steinway & Sons began handcrafting the world's finest pianos 145 years ago.

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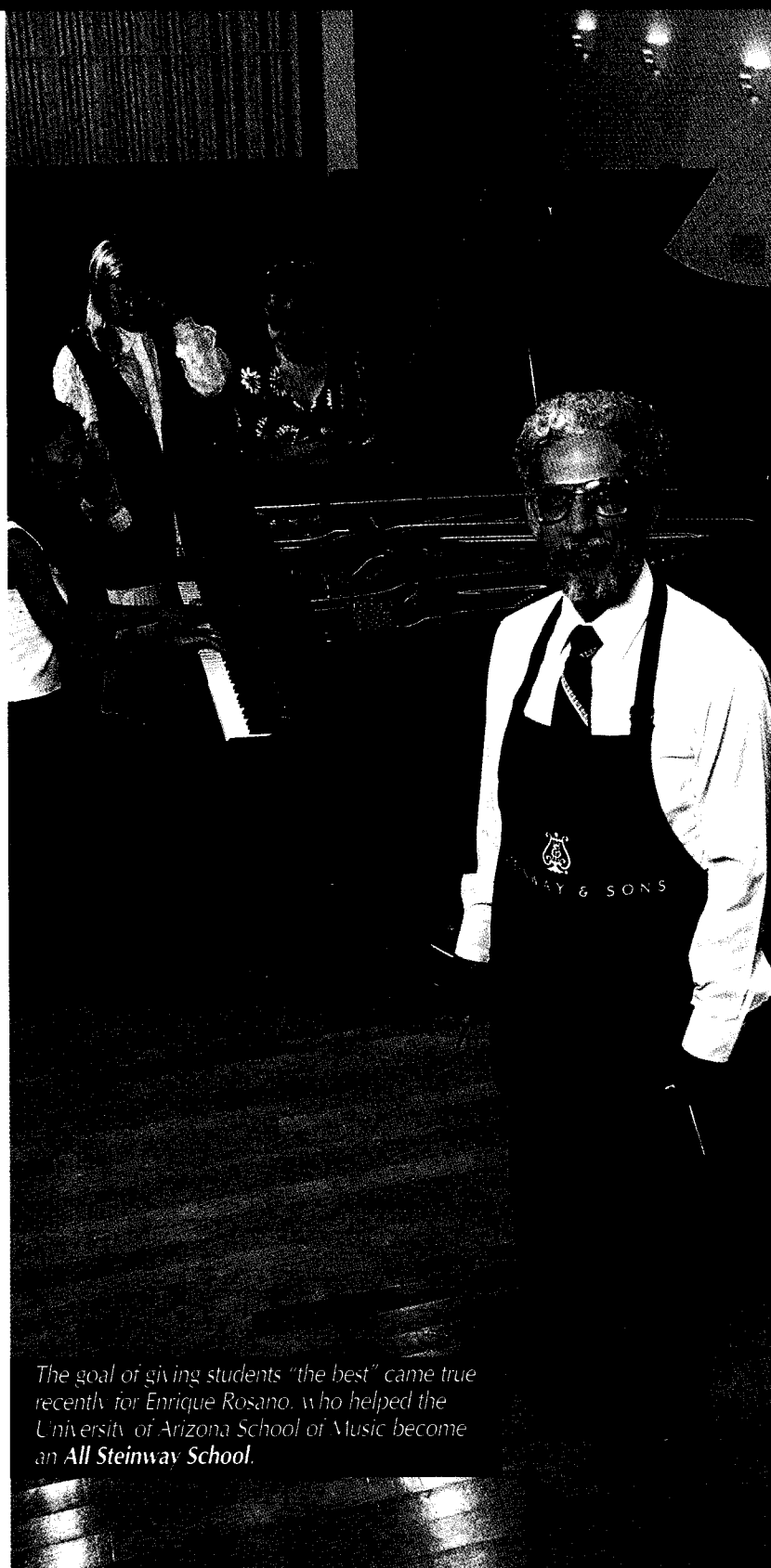

The goal of giving students "the best" came true recently for Enrique Rosano, who helped the University of Arizona School of Music become an ***All Steinway School.***

"What Happens If ...?"

By Mark Abbott Stern, RPT
Los Angeles, CA Chapter

Week after week, we perform small miracles of regulation on grand pianos to improve the way they play. We raise and lower key height, alter key dip, relocate jacks under knuckles, raise and lower repetition levers, tighten and loosen repetition springs, adjust let-off, increase or decrease drop, alter damper timing, assure correct pedal operation, locate strike distance, bed the action, assure parallel motion, adjust blow distance, align backchecks.

Wow! Isn't that enough? Actually, no. Wouldn't it be great if we could also turn a few additional screws that would: 1.) change the key ratio by moving the balance rail and the capstans; 2.) move knuckles closer to or further from the hammershank centers; 3.) increase or decrease the action spread; or 4.) angle the capstans? Richard Davenport, RPT, did more than wonder about these possibilities – he made them happen.

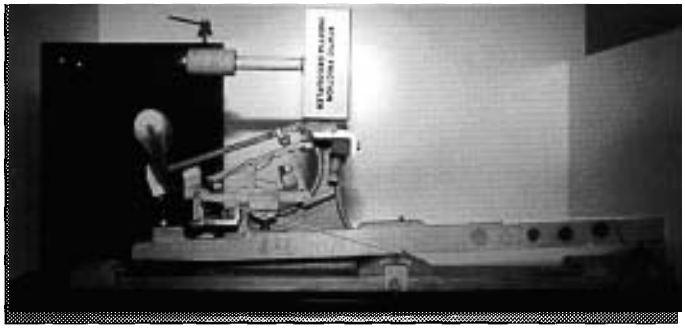

Photo 1 — The action model with strings connected to demonstate convergence at the jack/knuckle interface and at the capstan/heel interface.

Responding to the recent surge of interest in touchweight and action mechanics, Davenport conducted a series of experiments utilizing a boldly modified grand piano action model employing all of the capabilities on our wish list. Over a two-year period, Davenport's team (including Kay Forrest, Pam Consoli, RPT, and the author) took many weigh-off measurements. Results of these investigations were memorialized in a video presentation, ably recorded by Alan Eder, RPT, which became the basis for a class entitled "What Happens If ...?" The class was first presented in February 1998 at the California State Convention and again in July 1998 at the Annual Convention in Providence. At these sessions, technicians reacted with excitement to both the approach and the findings. A detailed report of the experiments follows, allowing those who were unable to attend the classes to share the benefits.

The Action Model

A Yamaha action model of 1980s vintage (See Photo 1) was modified as follows:

- The wippen rail (a small aluminum angle) was outfitted with a slide adjustment permitting the wippen flange to be moved closer to or further from the hammer rail creating an action spread range capability of approximately 4 mm. (See Photo 2)
- Wippen heels were made adjustable. The heel was mounted tightly on the bottom of the wippen by "interference fit," permitting

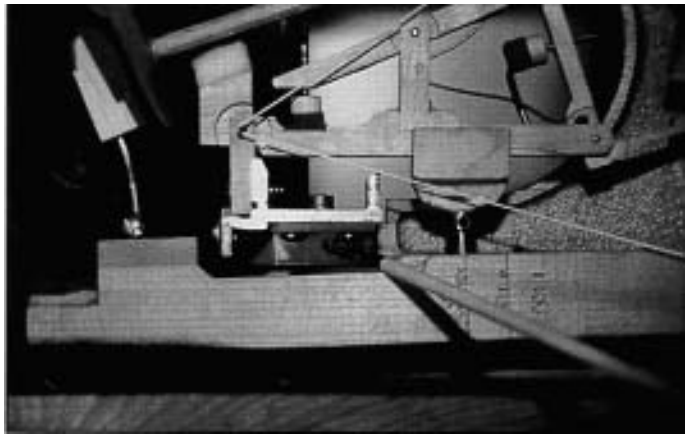

Photo 2 — The movable wippen rail segment and locking screw.

Photo 3 — The movable knuckle shown in unusable position way down the hammershank.

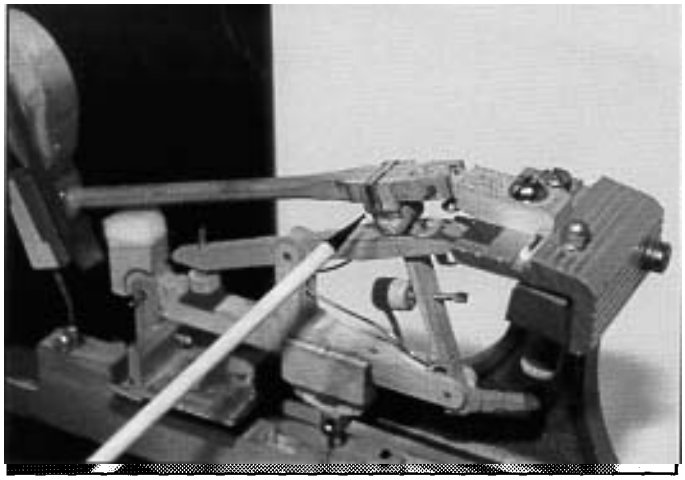

Photo 4 — The movable knuckle shown in position for test.

adjustment forward and backward to optimize capstan interface.

- The knuckle was removed from its hammershank and mounted upon an aluminum clip, permitting relocation of the knuckle anywhere along the length of the shank. (See Photos 3 and 4). Additionally, a variety of knuckle diameters were available.
- Capstan angle was rendered variable by using an insert into the top of the keystick with a projecting screw adjustment to change angular position (See Photos 5 and 6). Both 8 degree and 15 degree capstan angles were utilized.

Photo 5 — Movable capstan with angular adjustment screw.

- The balance rail segment was made moveable to slide closer to, or further from the action stack. In combination with capstan relocation, a variety of key ratios became available over an 8 mm range of movement accounting for ratios between 1.8:1 and 2.2:1 (See Photo 7).
- One-gram weights, made as clips, were fastened to the hammershank adjacent to the hammer adding mass to the hammer subsystem (See Photo 8).
- Similarly, one-gram weights, made as clips, were attached on top of the wippen bottom beam, over the capstan/heel.
- Hammers with various boring distances were used.

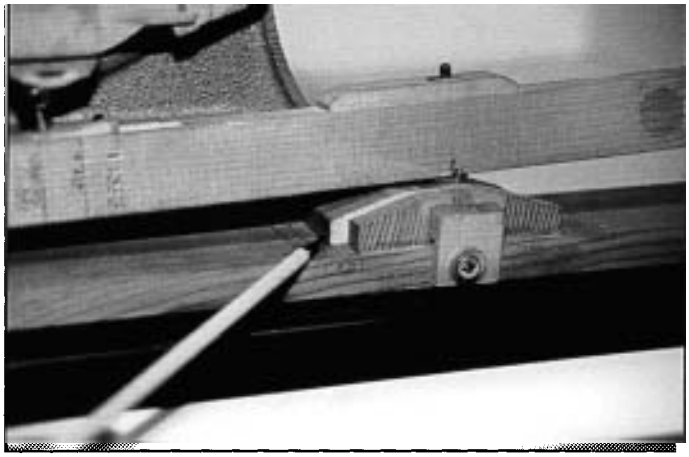

Photo 7 — Adjustable balance rail segment shown relocated toward action stack.

- A 400 gm mallet was installed on top of the action model superstructure so that it could swing downward 90 degrees from a vertical position to strike the top of the hammer rail (See Photo 9). This provided a uniform blow for relieving static friction during weighing.

Initial settings were:

- Action Spread – 112.5mm
- Knuckle-to-flange pin center distance – 17mm
- Blow distance – 46mm
- Key dip – 10mm
- Let-off – 2mm
- Drop – 2mm
- Vertical capstan centered under wippen heel
- Key ratio – 1.82:1

The Experiments

First, the action was regulated and many touchweight measurements were taken. Down Weight consistently remained at 50 grams, Up Weight at 25 grams. One-half of the difference between Down Weight (DW) and Up Weight (UW) was, therefore, 12.5 grams (FR).[1] These measurements constituted the baseline against which the experimental results would be compared.

Over a two-year period, dozens of regulated geometry changes were introduced to the action model, individually and in combination,

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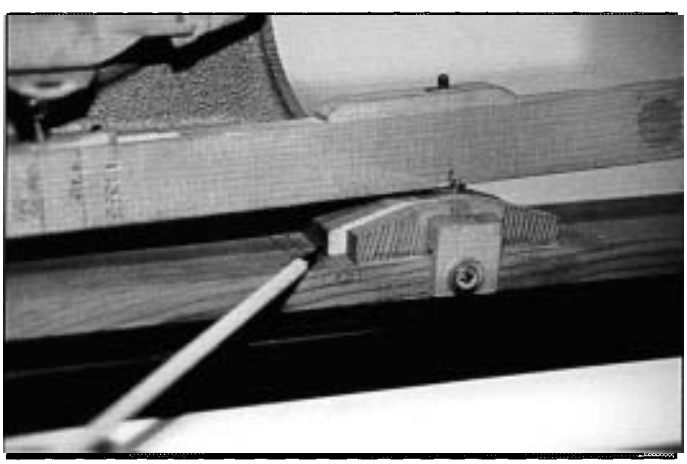

Photo.6 — Movable capstan shown in place at angle.

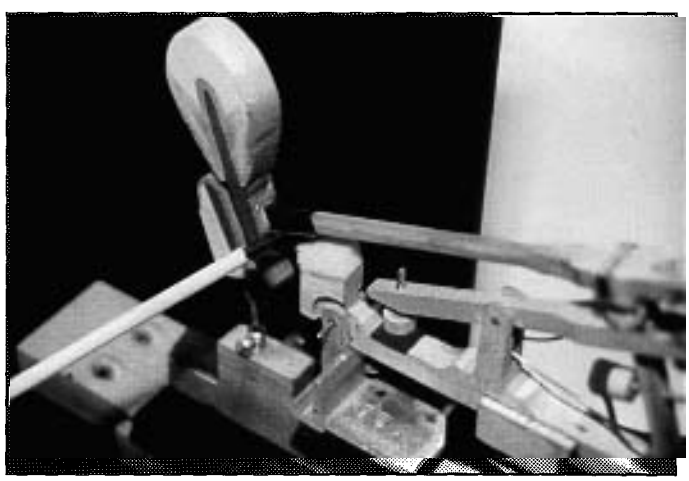

Photo 8 — Gram weight shown in position on hammershank.

"What Happens If ...?"

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yielding a variety of touchweight effects. Generally, none of these would surprise the experienced technician. But considerable interest developed around trends of the most significant items. A potpourri of 14 modifications, including their measured results, was included in the "What Happens If ...?" program and are presented here. Figure 1 (a slight variation of the program handout) is a tabulation of the modifications and results shown in the video. In each instance, after making the identified geometry change, the action was regulated as well as could be, using aftertouch as the final selection criterion, before taking touchweight measurements.

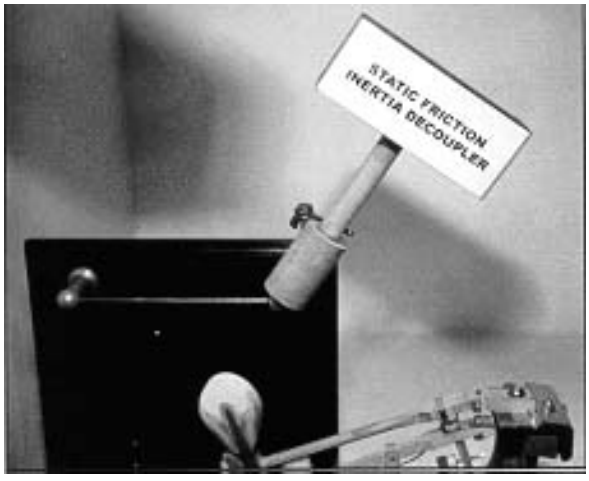

Photo 9 — Friction decoupler shown constrained in possible start position. See Figure 1 for full down position on hamer rail.

Situations 1 and 2

Action spread was increased by moving the wippen rail 1mm to 113.5mm without relocating the capstan. Results were:

DW 51gr UW 26gr FR 12.5gr

Then, the capstan was moved back to a position where it was centered under the wippen heel. Measurements in this condition were:

DW 53gr UW 26gr FR 13.5gr

It can be seen that both DW and UW were increased by shifts in either direction. Many measurements were taken at action spreads between 110.5 and 114.5mm. Figure 2 shows variation of the touchweight measurements throughout the range. Clearly, the manufacturer identified optimum operating conditions in their specifications. Very likely, a "sweet spot" is obtainable in every action where DW and FR are minimized and UW is adequate for repetition.

Situation 3

The wippen heel height was increased by 2mm. To accommodate the change, the capstan was lowered restoring blow distance. Convergence at the capstan/heel interface was affected. Resulting measurements were:

DW 51gr UW 25gr FR 13gr

This change is recommended to correct flattened wippen heels (bolstering) when extensive use has destroyed convergence and new wippens are not economically justifiable. In these cases, we would expect to see improvement (reduction) in FR.

Situations 4 and 5

The knuckle was first relocated 1mm further from the hammer center (18mm total distance), effectively increasing leverage from the jack against the hammer weight. Predictably, both DW and UW were reduced:

DW 44gr UW 21gr FR 11.5gr

Then a similar relocation 1mm closer to the hammer center (16mm) was tested. Reduced leverage and a now-marginal jack/knuckle interface yielded very undesirable results:

DW 60gr UW 30gr FR 15gr

Davenport concludes that knuckle movement up to 2 mm away from the flange pin can help a "heavy" action, but almost any relocation closer to the rotation center produces negative results. Figure 3 shows variation of touchweight measurements at various knuckle/pin center distances, resulting from many weigh-offs over a two-year period. Clearly, improvements in DW and FR are obtainable, but may be limited both by minimum UW requirements and by regulation difficulties resulting from the knuckle shift. Position and clearance of the jack may curtail the possible benefits. A happy medium should be sought.

Situations 6 and 7

The capstan was first rotated to 8

What Happens If...?

Situation	Original Weigh-off	50 DW	25 UW	12.5 FR
1. Increase correct action spread by 1mm by moving wippen rail (don't relocate capstan under wippen heel)		51:+1gr.	26:+1gr.	12.5:same
2. Increase correct action spread by 1mm by moving wippen rail (center capstan under wippen heel)		53:+3gr.	26:+1gr.	13.5:+1gr.
3. Increase height of wippen heel by 2mm		51:+1gr.	25:same	13:+.5gr.
4. Move knuckle 1mm away from hammer center (17mm–18mm)		44:-6gr.	21:-4gr.	11.5:-1gr.
5. Move knuckle 1mm closer to hammer center (17mm–16mm)		60:+10gr.	30:+5gr.	15:+2.5gr.
6. Angle capstan 8° toward backcheck (center under wippen heel)		47:-3gr.	22:-3gr.	12.5:same
7. Angle capstan 15° toward backcheck (center under wippen heel)		47:-3gr.	22:-3gr.	12.5:same
8. Move balance rail pin 4mm closer to player (decrease the length from front rail pin to balance rail pin)		56:+6gr.	28:+3gr.	14:+1.5gr.
9. Move balance rail pin 4mm away from player (increase the length from front rail pin to balance rail pin)		46:-4gr.	21:-4gr.	12.5:same
10. Add 1 gram to the hammer		55:+5gr.	29:+4gr.	13:+.5gr.
11. Add 1 gram to the wippen		51:+1gr.	26:+1gr.	12.5:same
12. Install smaller diameter knuckle (.380–.330)	Weigh-Off With New Hammers DW=44, UW=14, FR=15	44:same	14:same	15:same
13. Under-center hammer 2mm (boring distance too long)	(New Hammers & Small Knuckle)	46:+2gr.	15:+1gr.	15.5:+.5gr.
14. Over-center hammer 2mm (boring distance too short)	(New Hammers & Small Knuckle)	40:-4gr.	15:+1gr.	12.5:-2.5gr.

Figure 1

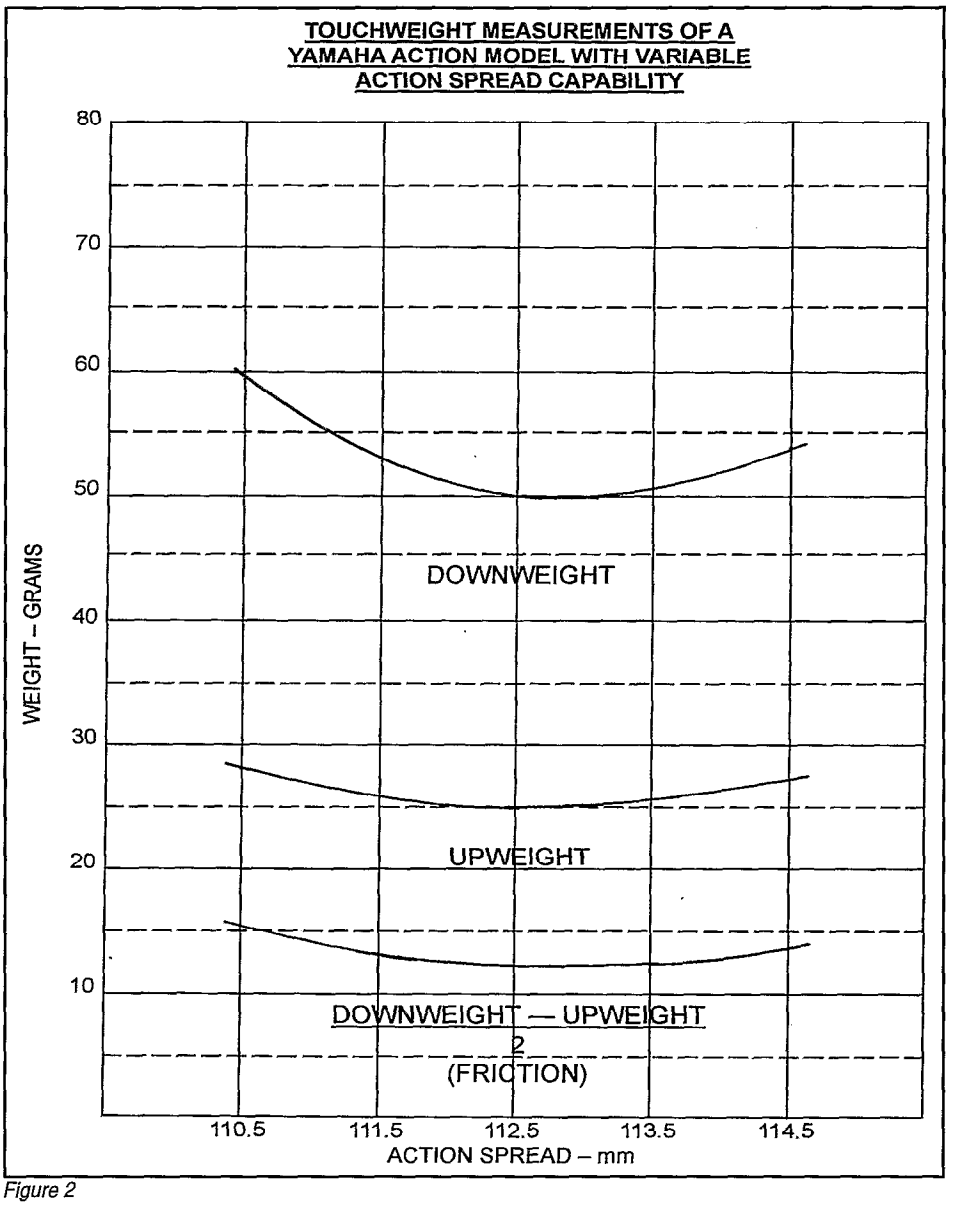

Figure 2

degrees from vertical retaining center-to-center contact with the wippen heel (Figure 6) yielding fairly positive results:

DW 47gr UW 22gr FR 12.5gr

Then, the capstan was rotated further to 15 degrees from vertical. Surprisingly, identical touchweight measurements were obtained. Davenport was quick to point out that, with no added benefit and the potential for severe heel wear, this is not a desirable configuration and that 8 degrees appears to be the enhancement limit.

Situations 8 and 9

The balance rail was relocated 4 mm further away from the action stack, and the capstan was moved a corresponding distance back along the keystick to retain the proper center distance relationship with the wippen cushion. The result was lengthening the distance from the key fulcrum (balance rail pin hole) to the top of the capstan. Consequently, the key ratio was changed, reducing leverage and requiring significantly higher DW and producing an undesirable level of FR. Results were predictably negative:

DW 56gr UW 28gr FR 14gr

The modification was reversed moving the balance rail closer to the stack and the capstan closer to the balance rail pin. The increased key ratio yielded the following:

DW 46gr UW 21gr FR 12.5gr

The reduced DW was obtained with no penalty in FR and with adequate UW. Of course, balance rail relocation requires major action frame modification usually associated with new keys. This is certainly a consideration where many prior key modifications seriously limit possible overhaul or where the cost of modification may exceed that of new parts.

Figure 4 shows effects upon touchweight measurements from variations in key ratio. As with the other modifications, this data was developed over an extended period. It can be seen that higher key ratios produce reduced DW and FR. Retaining minimum UW appears to be the limiting parameter.

Situations 10 and 11

Because after-market parts are usually heavier than the original, all of the emphasis up to this point has been on efforts to reduce DW without penalty. However, some piano actions are too light for the player and the corrections for that circumstance were covered.

First, a one-gram weight was attached to the hammershank adjacent to the hammer (Photo 8). Touchweight measurements were taken:

DW 55gr UW 29gr FR 13gr

A similar one-gram weight was mounted upon the wippen directly over the capstan. Results:

DW 51gr UW 26gr FR 12.5gr

It can be seen that DW is elevated approximately five times the weight added at the hammer and one-for-one for weight added at the wippen. Neither results in the inertia penalty, which accompanies the use of lead weights on keys.

Situation 12

The final three experiments required use of multiple hammers. As the action model provided only one, three new hammers of identical size and weight were utilized with the appropriate modifications. All three were lighter than the hammer used in Situations 1-11. Therefore, following regulation, the new set of baseline measurements were:

DW 44gr UW 14gr FR 15gr

A smaller knuckle (approximately .350" diameter) was substituted for the standard (slightly over .400" diameter). Touchweight measurements were identical to the baseline values. However, a more subtle improvement in "feel" was evidenced – a crisper "click" at let-off. As smaller diameter knuckles are available currently, technicians should consider their use when knuckle relocation is indicated.

Wholesale knuckle replacement,

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"What Happens If ...?"

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whether for relocation or for size change, can be less frightening than it appears with some tooling and implementation preparation. But, this is also material for another discussion.

Situations 13 and 14

Both under-centered and over-centered boring of hammers have advocates. In the former case, additional felt is provided at the strike point allowing either string cuts or eventual hammer filing to produce a level shank at contact with the string. Over-centering produces superior geometry throughout the action and may benefit from hammershank flexure to minimize strike point error.

In the first case, hammers were bored 2 mm too long, creating the under-centered condition. After regulation, results were:

DW 46gr UW 15gr FR 15.5gr

Clearly, this constituted deteriorated performance from the conventionally bored hammer. In contrast, the over-centered hammer, bored 2 mm too short, produced the following:

DW 40gr UW 15gr FR 12.5gr

Notice that all the effects were observable in DW – none in UW. This technique takes much planning and careful execution but appears worth the investment.

Conclusions

When an action overhaul is indicated, there are a number of opportunities to make changes in geometry which will yield superior touchweight performance. Most can be sampled before implementing. Some are easy to do – others far more difficult, but all are worth considering.

The specific measured values in these experiments really only apply to the action model being used. Technicians need to measure, weigh-off, and otherwise "baseline" individual instruments. At least one note in each section should be sampled – one each in the bass, low tenor, treble and high treble. Regulate and weigh-off the existing configuration, and then try some of these techniques. Play a little "What Happens If ...?" yourself.

Most assuredly, technicians who have never seen the video should make every effort to do so at the next convention opportunity.

Notes

1. One-half of the difference between Down Weight and Up Weight is typically referred to, inaccurately, as "Friction" or "Friction Resistance." A significant portion of this burden is due to elements other than friction. All of the lubricants in the world will not mitigate the changes resulting from moving the knuckle or compressing the action spread or reducing the key ratio. Something other than friction is involved. This subject requires a separate discussion. Nevertheless, to avoid confusion, this value will be referred to as "FR" in the remainder of this report.

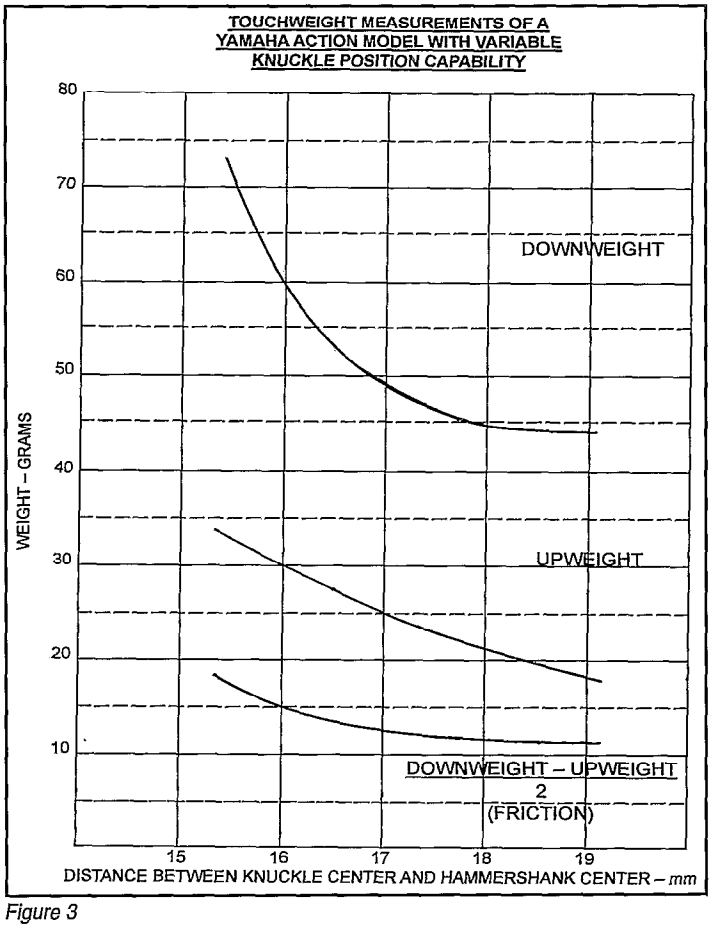

Figure 3

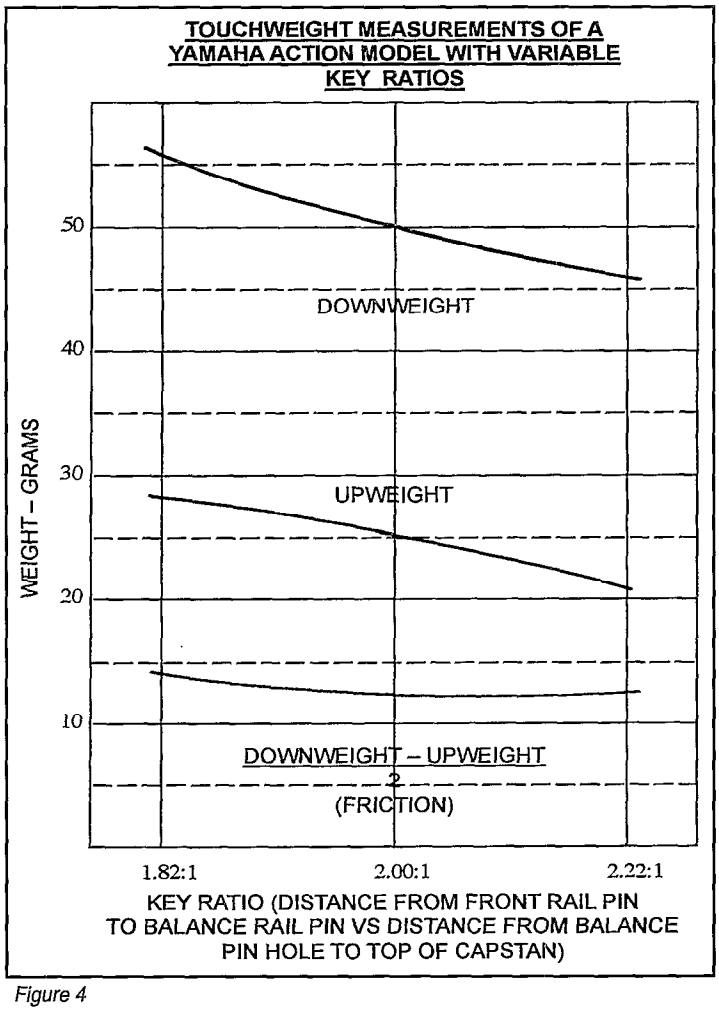

Figure 4

The Challenges of Modern Piano Tuning — Part II:

Setting the Temperament—A Precise Compromise

By Bruce Winn, RPT

This is the second in a series of articles designed to give serious Associate Members of the PTG information and exercises they will need to tune at the RPT level. In Part I we dealt with establishing pitch and setting the proper octave size for each piano. Now we will move on to:

Challenge #3

Use an orderly procedure to divide the octave into twelve equal semitones, applying a sequence of tests to verify the equality of the temperament.

Tuning any fixed pitch instrument involves compromise. Pure, beatless intervals do not fit nicely into perfect octaves. For example, three pure major 3rds fall short of an octave by a little more than 40 cents. Twelve pure 5ths overshoot seven octaves by about 24 cents. Over the history of tuning, there have been many tuning systems with some, most, or all of the intervals musically useful.

Tuning in the twentieth century has been dominated by equal temperament, and that is what you will be expected to tune on the PTG tuning exam. In equal temperament, the octave is divided precisely into twelve equal parts. None of the intervals are pure; all of them are tempered or compromised in a precisely equal fashion. Specifically, all the major 3rds are tuned wide of pure by the same amount (about 13 to 14 cents for most pianos) so that three contiguous major 3rds will stack up to make an octave. Similarly all the 5ths are narrowed and all the 4ths are widened by the same amount (about two cents) so that a circle of 12 5ths and 4ths will fit into the temperament octave. As we discussed last month, the precise size of the octave may vary slightly from piano to piano and must be taken into account in tuning a proper equal temperament for each piano. All this involves a lot of compromise and also a great deal of precision. Just as a diplomat must use precise language to negotiate a compromise, we must tune with precision to negotiate the compromise we call equal temperament.

A Framework for Tuning

I strongly suggest that you tune several notes early in your temperament sequence to create an interlocking framework. Here is one that works for me:

1. Prepare the piano for tuning, establish pitch, and tune A4, A3, and A2 adjusting for proper octave size as described in Part I.
2. Tune F3 so that the F3-A3 3rd is wide by about seven beats per second. Try to guess accurately, but you'll have a chance later to refine this interval.
3. Tune F4 so that the F3-F4 octave is the same size as the A3-A4 octave.
4. Now tune C#4. Experiment a little. Note that as you lower C# the A-C# 3rd slows down while the C#-F 3rd speeds up. Place C#4 so that the beat rate of the A-C# 3rd lies midway between its adjoining 3rds. You should have F-A slow, A-C# medium, and C#-F fast.
5. If you guessed correctly in step 2, these three contiguous 3rds will stand in the proper 4:5 ratio and you'll be nearly done. If you guessed wrong, the three 3rds may sound F-A too slow, A-C# medium, and C#-F too fast. Lowering both F's slightly will put things right. If you guessed wrong the other way, the three 3rds will sound medium, medium, medium. In this case raising both F's a bit will put the contiguous 3rds in proper order.
6. Tune C#3 so that the C#3-C#4 octave is the same size as the A2-A3 octave. Sometimes it is helpful to tune this note early to give you extra interval tests for making the adjustments described in step 5.
7. You have now tuned seven notes A2, C#3, F3, A3, C#4, F4, and A4. You have divided two octaves into six contiguous 3rds. These 3rds should progress smoothly from bottom to top with the beat rate of each 3rd slightly faster than the one below it and somewhat slower than the one above it. There are also three major 10ths (A2-C#4, C#3-F4, and F3-A4) which should progress in the same manner. In addition, you should have four single octaves and a double octave each adjusted to sound as good as possible for the piano you are tuning.

If you start with a precision framework like this, the other notes of your temperament should fall easily into place.

Many sets of directions for tuning equal temperament have been published in books, the *Piano Technicians Journal*, and in chapter newsletters. Work with one or several of these to develop your temperament skills. I am also including with this article my current personal temperament not because it is original (it isn't), but to show how the ideas of master tuners past and present can be incorporated into a practical temperament system.

In learning to tune the temperament region, there is no substitute for practical, hands-on experience. You can read books and articles all day long, but real learning begins when you sit down at a piano, tuning hammer in hand, and try out various ideas to see what works for you. Set aside time for study, listen carefully, keep an open mind, and dare to experiment with new procedures. Tuning is personal; you must work to find and develop a system that suits you.

Whatever system you work out, be sure to verify your

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The Challenges of Piano Tuning

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temperament with aural tests:

- Major 3rds played chromatically up the keyboard should have gradually increasing beat rates, each 3rd a little faster than the one below it. Contiguous or stacked 3rds should have beat rates in a 4:5 ratio.
- Major 6ths and major 10ths progress in a similar fashion with gradually increasing beat rates as you move up the keyboard.

In theory, 4ths and 5ths should behave the same way, but scientific analysis reveals a different result for most pianos. For modern pianos, all the 4ths in the temperament region beat at nearly the same rate (about one beat per second). 5ths are somewhat more complex, beating at about one beat in two seconds (at the 3:2 level). In any case, running a series of parallel 4ths and 5ths on the keyboard will quickly reveal any poorly tuned intervals in your temperament. Other tests can be used to confirm which notes are wrong and how to correct them.

There are several other tests as well. Experiment and find the ones that work for you. Remember that you are using tests to verify equal temperament, so look for a smooth and even progression from note to note.

A Personal Temperament

By Bruce Winn, RPT

Directions for Tuning

Foundation/Framework: A2,C#3,F3,A3,C#4,F4,A4

Prepare the piano for fine tuning, establish pitch, and tune A4, A3, and A2 as described in Part I of this series. Tune F3, F4, C#4, and C#3 as described earlier in this article. Check for the proper progression of the six contiguous major 3rds you have tuned. Major 10ths and octaves provide additional tests.

First Series: D4,G3,C4, also Bb3

From A3, tune up a 4th to D4, down a 5th to G3, and up a 4th to C4. Check the F3-C4 5th. If this 5th is too narrow, you have tuned the other three intervals too nearly pure. If the F3-C4 5th is beatless or wide, you have tempered the other intervals too much. Readjust D4, G3, and C4 accordingly.

At this point, I like to tune Bb3 up a 4th from F3 or down a major 3rd from D4. Listen to the beat rates of the F3-A3 3rd, the F3-D4 6th, and the Bb3-D4 3rd. These should progress in the order given as slow, medium, and fast. The Bb3-D4 3rd should be just a smidgen faster than the A3-C#4 3rd.

Second Series: E4, B3, F#3

Tune E4 up a 5th from A3 (or down a 4th from A4). Listen to the G3-E4 major 6th and the A3-C#4 major 3rd. These intervals should beat at the same rate. This is the inside 3rd/outside 6th test and is very accurate for fine tuning.

Tune B3 down a 4th from E4. The G3-B3 3rd should beat somewhat faster than F3-A3, and somewhat slower than A3-C#4.

Tune F#3 down a 4th from B3 and check that the F#3-C#4 5th fits in properly. The F#3-Bb3 3rd should beat slightly faster than F3-A3 and slightly slower than G3-B3.

Third Series: Ab3, Eb4, recheck Bb3

Tune Ab3 down a 4th from C#4. Check that the Ab3-C4 3rd is faster than G3-B3 and slower than A3-C#4.

Tune Eb4 up a 5th from Ab3. Check the Bb3-Eb4 4th and the F3-Bb3 4th. Test the major 6ths—F3-D4, F#3-Eb4, G3-E4, and Ab3-F4—which should progress smoothly and evenly.

You're done!

Credits and Commentary

This type of framework forms the beginning of the Baldassin-Sanderson Temperament developed and taught by Dr. Al Sanderson and Rick Baldassin. A double octave is divided into two precisely tuned single octaves. Then each of those octaves is divided into three equally tempered major 3rds. Three pitches, seven notes, numerous interlocking tests—an excellent way to start.

Tuning a short series of 4ths and 5ths and then checking with major 3rds and 6ths is an old idea going back at least as far as Dr. William Braid White who laid out the details in his book, *Piano Tuning and the Allied Arts*. My early mentors, Bob Ruggero, George Doerflein, and Richard von Bernewitz referred to this book as "The Bible" and taught me many valuable lessons from Dr. White.

In the early 1980s a temperament system called "Both Ways from the Middle" was discussed in the *Piano Technicians Journal* and at local PTG meetings. This type of test was an essential part of that system. Sometimes this test was called the 7-8-9 test referring to the approximate beat rates for the three test intervals.

I have always associated the test of the inside 3rd/outside 6th with the late George Defebaugh, one of the finest tuning teachers in the PTG. For many years, I used this test as a final test after I had finished tuning the temperament. At a recent North Carolina State Conference, another master tuner, Bill Garlick, suggested that I begin using this test within the temperament tuning process to get the full benefit of its accuracy.

When tuning B3, this same test becomes available with G3-B3 as the inside 3rd, and F3-D4 as the outside 6th. Two more inside 3rd/outside 6th tests can be used when tuning Ab3 and Eb4.

By the time you get to the last few notes of any temperament, there are numerous tests available. Be careful not to "test the tuning to death," for making many tiny changes in pursuit of perfection can backfire and destabilize the good work you've already done. If you have tuned and tested each section correctly before you move on, there should be little if any need for major corrections at this stage. Keep practicing and good luck!

World-Class JUNK

By Susan Kline, RPT
Feature Writer

Junk That Isn't - Part I

Mason & Hamlin

Screw Stringer Uprights

These wonderful old pianos have often been ruined by ignorant attempts to tune them without the right tool, or to restring them without knowing how to avoid leaving the wire too long. When the new wire is too long, the screw stringer mechanism is asked to bring them up further than it can, and the threads strip out. I was lucky enough to see a screw stringer upright last year which still had the original tool for tuning. It was fun to see how the tuning style differed from normal tuning. I'm going to put down here what I observed and what else I know or have guessed, in the hopes that fewer old screw stringers will be ruined by vise grips or poor restringing.

In the past year, Mason & Hamlin screw stringer tips have shown up twice in "Tips, Tools, and Techniques." In July, 1998, Lloyd Wagner, RPT put in some hints for tuning and replacing wire. In August, 1998, I wrote up a tip invented by Donna Byrd, RPT, showing how to keep your place when tuning. Also, in the November, 1995 *Journal*, in the Q&A section, Jim Harvey talks about screw stringers and how to tune neglected ones.

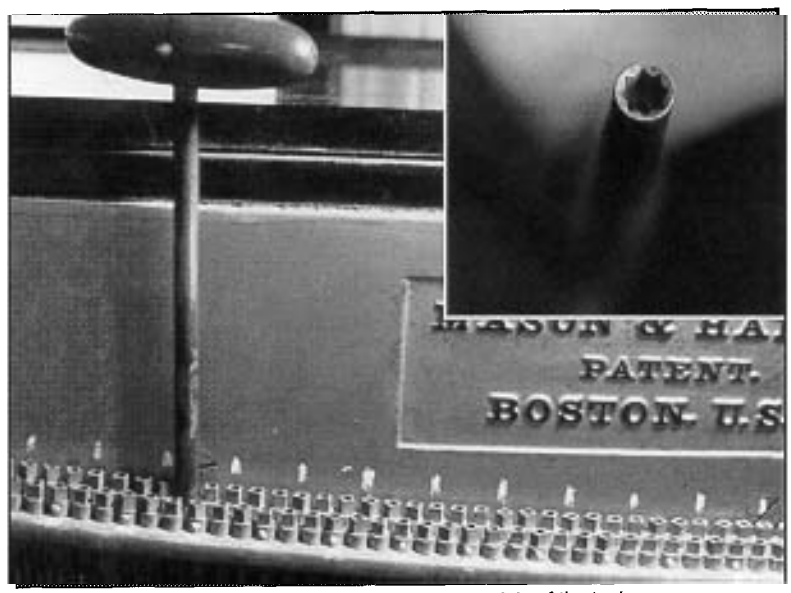


Photo 2 — The tuning tool in use. Inset — The recessed tip of the tool.

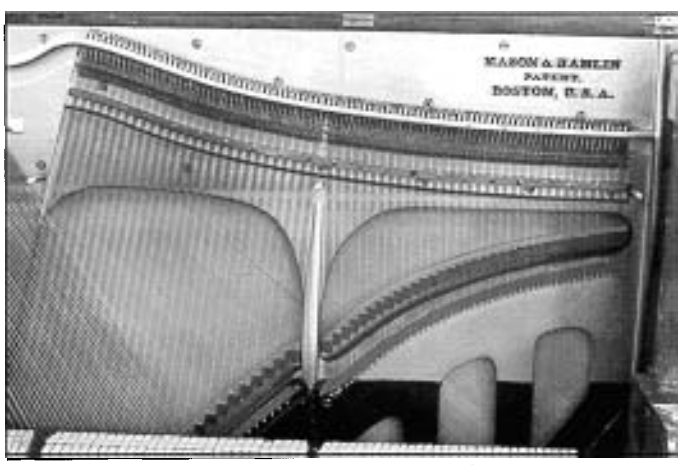


Photo 1 — Inside an 1892 Mason & Hamlin screw stringer.

Tuning

The instructions printed on a plaque inside the piano recommend tuning up to the pitch from below, rather than going sharp and settling the pitch downward with hard blows. Hard blows tend to raise rather than lower the pitch with screw stringers, it said.

I didn't notice this, but I did notice a very striking feature: whenever you change direction while tuning, either upward or downward, there is a great deal of slack to take up, maybe as much as a quarter turn. So you turn and turn and feel nothing is happening, and wonder if you are on the right nut. Then all of a sudden the pitch changes, and you've gone too far. Once the slack is taken up and the pitch starts to change, the mechanism is exquisitely sensitive to the smallest movements. I learned to turn the tool a long way fast, without worrying, then to slow down to a snail's pace just before the pitch started to change. At that point, I was able to tune decent

World-Class Junk

Continued from Previous Page

unisons. Once you master the technique, so that you aren't changing pitch in huge gulps, the tuning is magnificently stable.

The Tuning Tool

This is the original tool which Mason & Hamlin sold with their pianos. You can also buy a Mason & Hamlin wrench. I just found them in both the Schaff and APSCO catalogs. However, the one which I have, which I think is the same as these, will fit over the nuts, but has no recess to help find them. If the face of your Mason & Hamlin wrench is completely flat, you might try grinding a gradual recess in it with a Dremel tool, so it will resemble your normal tuning hammer star. I've included a drawing of the original tool with dimensions, in case you wish to build yourself one. You might take the Mason & Hamlin wrench, cut off the handle, and braise it to a rod. Then just add the T-handle. I'm not sure about the tempering of the supply house M&H wrenches, however, and how it might be affected by braising. Consulting a good machinist might be a good idea.

Restringing

Caveat: I have never changed a string on a screw stringer. However, someone passed on the following tip so that the amount of slack in the wire will be correct, and the mechanism will not be stripped out trying to bring it up to pitch.

1. Turn both nuts down so that they have the maximum adjusting distance available in the sharpward direction.
2. Tie the knot on the first screw stringer elbow.
3. Take the wire down through the bridge pins, around the hitch pin, and back up through the bridge pins again.
4. Pull the wire taut at the top end, and cut to the right length. (This would have to be determined by experiment; then one could measure for any other strings.) At this point, it will be quite apparent that there just isn't enough slack to tie the second knot.

Therefore:

5. Pull the wire off the hitch pin and bridge pins; tie the second knot; replace the wire on the hitch pin and thread it through the bridge pins again. That very useful "Sciortino Bass String Twisting Tool" (#15298 in the APSCO catalog) can be helpful here to get the wire back over the hitch pin.

Anyone who tries this, do tell me how well it works. It certainly sounds like a common sense way to approach the dilemma.

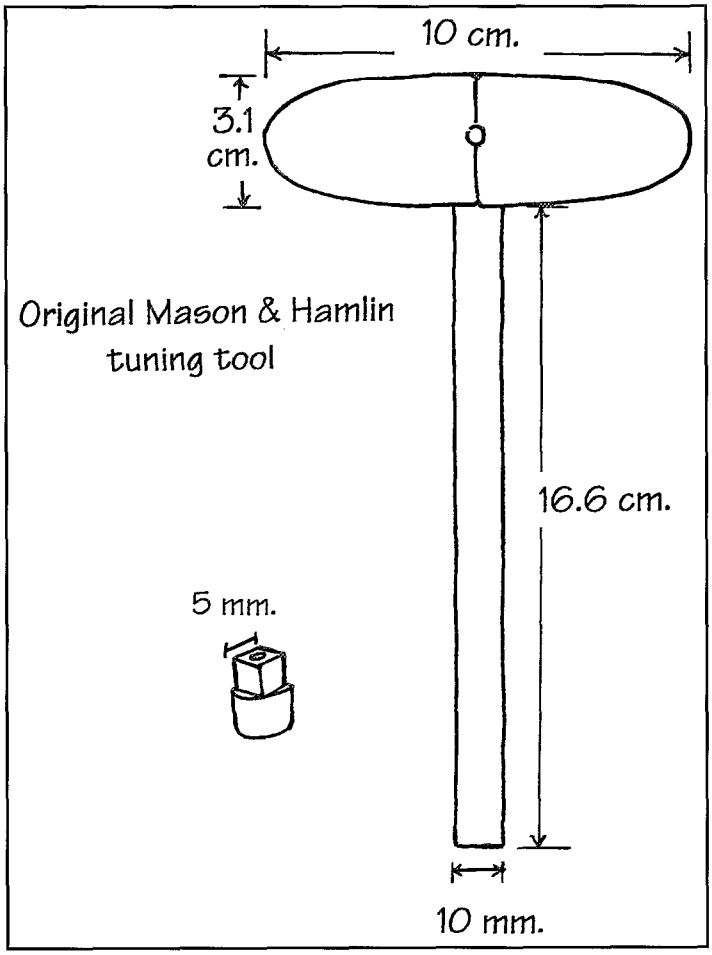


Figure 1 — The tool.

By David Patterson, RPT
Toronto, Ontario Chapter

The Bartolomeo Chronicles

Bartolomeo Considers the Tuning Pins

Bartolomeo is always disappointed when he finds very loose individual tuning pins within an otherwise workable set. He is aware that in many cases it was caused by a piano technician replacing a string, usually in the treble or high treble. The standard scenario goes something like this: a wire snaps, the technician decides on a new wire, the broken wire is removed, both pins are rotated three turns counterclockwise, the new string is fitted into one of the becket holes, that pin is rotated 2 1/2 turns as the new wire winds onto the pin, the remaining wire is installed at all points on agraffe / bridge / hitch pin, the wire is measured and cut, the installation is completed by turning in the second pin and completing all other details.

What Bartolomeo finds years later is two loose tuning pins within an otherwise satisfactory set. The act of turning out a pin decreases its effectiveness by about one size, causing that component to fail far ahead of the rest. He recalls being taught to rotate a pin only 3/4 turn, the amount needed to remove a string. He carries a spare tuning pin in his kit for the purpose of making a neat, tight winding which is then removed and placed onto the actual pin, before re-tightening the necessary 3/4 turn.

Many other lessons come to mind for Bartolomeo. He recognizes that a 4/0 size pin is the maximum realistic size to fine tune with. Larger pins have more surface area contacting the hole and result in an unsettling "feel," somewhat akin to the unusual feel of an entire action pinned with center pins #21 or higher. The outside of the circle must travel further in both cases, thwarting the original design intention. A 2/0 pin is .015" smaller in diameter than 5/0; that equates to almost 1/20" of extra surface area transmitted to his tuning lever and arm. This is substantial when he considers that adjustments as small as 1/5000" are necessary in the treble section.

For loose tuning pins, he avoids individual replacements, especially on sets that are marginal or loose. The piano owner is alerted that a replacement set is a far better value than one-at-a-time repairs. Also, selected larger pins driven into a pinblock diminish the results of any future stringing by creating unevenness among the holes.

Tapping in an entire set can gain the client an average two or three years. A veneer shim can gain an average five to 10 years. In this repair, one or more 1/16" x 2" veneers are spaced evenly, set into the bottom of the hole, held in place by the original pin as it is reinstalled, then snapped off where it protrudes above the plate.

Because he was taught that different techniques work better for different technicians, he focuses on results, keeps an open mind, and tests all new information himself. He sees tuning pin repair procedures on an effectiveness scale, based on what he has found successful for him. Much as he would with the different supply house tools in his arsenal, he places the repair methods in order of overall effectiveness: walnut or beech veneer, 3-hour epoxy, used tapered pins, sandpaper, chemical treatment, 5-minute epoxy, thin cyanoacrylate, tapping, new pin two sizes larger, metal bushings.

Bartolomeo occasionally finds a piano in which the entire set of pins is too high, resulting in springiness, flag-poling, as well as an intensified reaction to pin twisting. Even in tuning pins driven to the proper height, twisting is always present and occurs because the pin rotates inside the hole later than in the exposed portion. Rather than leaving the pins high, he gains agreement to remedy the improper height by pounding in the entire set to the end of the threaded area.

Next month, Bartolomeo sees the people.

The Tuner's Life

Goldberg Variations

By Anita Sullivan
Feature Writer

If we start in the middle, it might be this way: a grand piano alone on the stage of the church, black, shining; 300 people in a semicircle of pews around; late afternoon sun sifting through the angels in the West windows, the East ones already dark. The pianist comes down the aisle and steps lightly onto the stage, wearing black trousers, dark blue shirt. He stands for a minute acknowledging the applause. We look at him and realize that inside his head, this very minute, he is carrying the Goldberg Variations, all thirty of them. You would never know, if you just met him on the street. Jeffrey Kahane sits down at the piano, tosses back his thick curly hair, extends his hands over the keys, and waits.

If we started earlier, I would be in the front hall of my house, nervously pressing my knuckles to my mouth, and listening to my piano coming down the stairs. I'm standing in the doorway of the laundry room, sticking my head out now and then, expecting to hear someone saying "Oh, help!" and a sudden slide, the crunch of bones, the thud of wood against a doorway. What am I doing here, anyway? Nobody needs me now. I should have gone out for a long walk. The piano's new owners wait, smiling happily and looking confidently up the stairs while I lurk in the doorway, a traitor who sold her piano for a few pieces of silver. Already I can feel my hands twitching over the empty space above the keyboard.

This was my grandmother's piano. In the front parlor it kept company with carved lions, with mother-of-pearl, with glass-fronted cabinets, maroon drapes. It nestled its three casters into a Persian rug. Here my grandmother would play Chopin in the dark on those long evenings when my grandfather was seeing patients in his office through the French doors and across the hall. In the daytime the room was filled with the ticking of clocks. This piano, my piano, born in Buffalo, New York, had spent thirty years in its comfortable parlor before being rudely sent out for a tour of the United States — Huntsville, Alabama; Richmond, Virginia; Santa Fe, New Mexico; Corvallis, Oregon. I first saw it lying tummy-side out, in the back of a small piano shop in Virginia, waiting for me to claim it. It followed us around for ten years, doing a short stint in the middle of my son's bedroom, a summer in a duplex in Los Alamos, New Mexico, a few months on loan to a concert pianist on the other side of town. The Chopin which had seeped into its entrails was overlaid by Bach, a little Bartok, a great deal of Hanon.

My grandmother's piano finally bumps its way to the bottom of the stairs, and the hefty young man who is risking life and limb by defying gravity at its front end, steps from the narrow doorway into the hall, holding two enormous white straps. I peek out from between my fingers, remembering to breathe. And there, with folded wings, my dear old piano emerges slowly through the doorway, bottom side first, like a breach birth. Soon it has slid clear of the opening and is resting on its dolly in the hall, turned now to face the front door, ready to go out into the world, to be refinished, to have a brand new plastic keyboard, to feel the pressure of new fingers on its keys.

Now the end of the story. The last Goldberg Aria is the same — or almost the same — as the first. Kahane lowers his hands again onto the keys. We all know what is coming, it is inevitable. The variations are done, it's been a splendid romp, Count Goldberg is fast asleep in his chair again, and a whole lifetime has gone by in an hour. But now the angels wait with folded wings, the blue ones, the yellow ones, the white and silver ones, all their windows gone dark. The melody begins, familiar and exquisitely strange. We anticipate absolution, all of us together, our faces pointing in a circle towards the keyboard, waiting once again for this small song to spin itself out.

The Puzzler

By Dan Levitan, RPT

Puzzler #15—Resistance Movement

"You're still here? I thought you'd be up on the second floor by now."

"I know, but I ran into an action problem."

"I don't want you spending too much time on actions this week. I know you're interested in helping out here so you can get into more shop work, but right now we should be focusing on tuning up those practice rooms."

"But I really can't figure this out. Do you think you could take just a minute to look at it?"

"I suppose. What is it?"

"Well, first I heard a click, which sounded like a loose hammer flange screw. So I tightened it, and the clicking stopped, but now the hammer's rubbing something. I can't see what it is touching from here, and I didn't want to pull the action — I've never pulled an Acrosonic before."

"Then I'm glad you didn't. What makes you think the hammer's rubbing something?"

"It feels a little sticky—you know, stiff. But it was plenty loose before I messed with the flange screw. I think I must have respaced it a little."

"Could be. Try backing the screw off a hair."

"What?"

"Back it off, just a tad...there...you have it?"

"Yes."

"Now try it out."

"It's—it's much better. And still not clicking. But I was careful not to change the spacing...I don't get it."

"That's because you've probably never seen a variable resistance hammer flange before."

"A what?"

"You often find them on these old Acrosonics. You tighten the flange to adjust the friction."

"Really? That's so cool! I never even heard of it before."

"Okay, since you're already into it, why don't you pull the butt and have a closer look at it. Oh, and can you drop this mail off in the shop when you get there?"

"Well ... sure ... but I guess I wasn't really planning on going to the shop. Don't I have to get up to the practice rooms?"

"Yes, but I have a feeling you might want to stop off at the shop first. Just a hunch. I'm off—see you on the second floor."

Explain.

Answer to Puzzler #15—Resistance Movement

Of course, there's no such thing as a variable resistance hammer flange. That was just some good-natured baxing. The hammer flange was cracked. When the screw was tightened, it spread the flange ears, creating extra friction on the pin. With the screw backed off slightly, the ears relaxed enough to free the pin, but the flange was still secure enough not to click. Once the butt was pulled, the condition of the flange would become obvious, and a trip to the shop would follow.

Puzzle mail (snail mail only) should be sent to Daniel Levitan, Puzzle Editor, 530 First Street #6, Brooklyn, NY 11215. Elaborations on previous puzzles will be printed, even at the expense of the puzzle editor's dignity. Especially welcome are ideas and suggestions for future puzzles, subject to whatever modification the whim of the editor may deem necessary.

PTG Review
PIANO TECHNICIANS GUILD
DEDICATED TO PTG NEWS • INTERESTS & ORGANIZATIONAL ACTIVITIES

Back by Popular Demand: Tuning Tutoring — One-on-One

By John Ragusa,
1999 Institute Director

As most of our critics (our customers) are people with almost no understanding of how to tune a piano, we often don't get the feedback we need from them to know where improvement is in order. We do know, however, that we should be doing the best job that we as individuals are capable of doing. And even though our customers may not understand exactly what we are doing, they will know when it's not right.

This summer in Kansas City you have the opportunity to sit down one-on-one with a highly knowledgeable and experienced tuner for one full period. You pick the subject you want to concentrate on: temperament, octaves, unisons, setting pins, etc. Whether you're tuning aurally or using electronic devices, tutors are available for participants at any level of expertise.

Also this summer, classes in tuning will include Keith Bowman's "Sudden Impact: Using the Impact Hammer," Dan Levitan and Fred Tremper's "Beats, Partials, and Inharmonicity," Christine Lovegren's "Temperament Building," and Jim Coleman Sr.'s "Advanced Tuning." Gina Carter will show you how to pitch raise using the Accu-Tuner™ in just one pass. Virgil Smith's class will offer unique insights on aural tuning, and Randy Potter will be exploring electronic tuning using aural checks. Interested in historical tunings? You won't want to miss Ed Foote's "Hysterical Temperaments."

There's a universe of knowledge waiting for you to take part. Be the Best!

Be in Kansas City, July 21-25. ■

Mini-Technicals:
There's Nothing "Mini" About Them!

Do you want to sharpen your rebuilding skills, refine your temperament or learn a good way out of a ticklish repair problem? What would you give to attend a class under one of the top instructors in the country, while they teach on a very particular aspect of a subject? There's a group of classes that exactly fit this description that many people overlook: Mini-Technicals. By concentrating down to half the length of a standard class, the instructor is able to focus in on a portion of a subject that might be passed over in the longer session.

This year you can attend twice as many Mini-Technicals than you could before since all of the programs will be offered twice. To put it bluntly, you can't afford not to attend these classes, many of which are brand new for this year.

Come to think of it, when was the last time you updated your knowledge of the function of such humble action parts as the bridle strap or the knuckle? Have you recently wished that there were an easier way to move a piano? What dangers do you face when you relocate little Mr. Rodent's home? Are you up on the latest research concerning longitudinal string vibration, why strings break or how to repair them? How can you tune better in Equal Temperament? How would you tune in a Historical Temperament or know which one to use?

Learn about the elements of piano design. Discover new ways to redesign old instruments into far better ones. Experience new ways to keep the old ones going a little while longer. Figure out ways to improve your business from handling your finances to communicating with your customers.

Can you think of any other place where you can invest an afternoon of your time and gain so much? Are you going to find the answers by reading this article? No! You have to come to Kansas City and invest in yourself. The opportunity is right in front of you if you only reach out and take it. The instructors will be there. The classes will be there. Your friends and competition will be there. How about you?

— Allan L. Gilreath, RPT
Assistant Institute Director ■

Count Basie went 'Stompin' at the Savoy.' You can, too.

The Savoy. A favorite Kansas City hotel and grill for nearly a century.

What's more, you may request the table favored by former President Harry S Truman on his frequent visits to this landmark. Kansas City. It's a great town with a rich history, a giant in the development of jazz, and an outstanding city to host the 42nd Annual Piano Technicians Guild Convention & Technical Institute, July 21 - 25. Make plans now to attend.

Technicians & Manufacturers – Different Sides of the Coin

David R. Campbell, RPT
Trade Relations Committee Member

It has always been a curiosity to me why there seems to be an adversarial relationship between piano technicians and piano manufacturers (or between manufacturers and technicians, depending on your point of view). In my career, I have been on both sides of the fence and have found myself caught up in this phenomenon.

The piano market path is pretty simple; a manufacturer builds an instrument, he sells it to a dealer, and the dealer sells it to an end user, (customer) and that is all there is to it. As technicians, we have our livelihood handed to us on a silver platter because the product the manufacturer built, the dealer sold and the customer purchased requires constant, never ending service! *We should be in love with piano manufacturers.*

TRADE RELATIONS COMMITTEE

This is also a market situation where the key elements, manufacturers, technicians, and piano owner can't succeed without each other. If no one built pianos we would be out of business. If no one bought pianos we would be out of business. There are other important participants in the piano market such as dealers, teachers, publishers, accessory suppliers, etc. but for this article we will talk about manufacturers and technicians.

The thing that sets up this odd relationship is "stone throwing" by both sides. Let us look at the positives and negatives by listening to oft-heard comments from both points of view.

From the Manufacturer

Why do technicians "poor mouth" a product in front of a customer? It certainly achieves nothing! If there is a problem with the piano, the technician should be assuring the customer that he and the manufacturer will take care of it. If it is because the technician does not like the level of quality of the instrument, he needs to learn that customers, not manufacturers, set quality standards by dictating the price they will pay for a product. (Marketing 101).

Piano manufacturers worry that if they do ship problems (it happens), the skill level of the technicians in the field is sometimes not high enough to make a satisfactory repair efficiently. Some technicians consider a warranty repair request an opportunity to get rich. Although it looks like piano manufacturing leads to a pot of gold, in reality it has one of the slimmest gross profit margins in the business community.

Despite this, manufacturers support technicians by:

- Sponsoring schools and seminars.
- Maintaining technical support people on staff.
- Publishing service manuals.
- Buying advertising in PTG magazine
- Buying space at PTG regionals and nationals.
- Contributing entertainment and sustenance at national and regional events.

From the Technician

When a technician calls a manufacturer's service number he would like to hear a human voice sooner, not later. The problem with today's automated phone answering systems is that the company makes the assumption that their time is more valuable than a technician's. Our time is as valuable as theirs. E-mail and fax work great, but there are those times when a customer wants an answer now. Voice mail has its positive side, but more times than not, it ends up as a way to screen calls.

Technicians don't mind seeing and solving problems. That is what we are here for; but – when the same problem appears over and over again, despite repeated reports of the problem – someone at the Home Office should compile complaints and react, when there is a statistical indication. What happened to the technical bulletins we used to get from time to time?

"We should be in love with piano manufacturers."

There is a gray area about handling warranty claims. When we are facing the customer, the customer is looking to us for a clear cut set of steps that will be taken to solve this problem. The warranty usually states that the customer should contact the dealer first, but with all the dealer closings and dealer switching, that is not always possible. Fewer dealers have staff technicians these days – so more and more – independent technicians are caught in the middle of these situations.

Timely parts shipments can be a problem. We realize that overseas plants do create a problem in replacement parts inventory. However, setting a higher priority on quick reaction time can prevent a small customer complaint from becoming a huge one. Manufacturers simply would not accept a slow response from a supplier and technicians would appreciate that kind of reaction when dealing with warranty replacement parts.

Members of the Piano Technicians Guild do offer:

- Piano technicians who are exposed to ongoing technical training
- People who willingly offer to be a buffer between customers and manufacturers in complaint situations
- People whose livelihood is dependant on presenting the piano in its best possible playing and appearance condition.
- Piano technicians whose skill level and business behavior is governed by a code of ethics.

To sum it all up, piano manufacturers and piano technicians are married to each other, and, all in all, it has been a good marriage. As in any marriage there has to be some give and take, and occasionally some counseling to get us over the rough spots. Open two-way communication is essential.

With the decline of the piano market over the last 20 years, it is more important than ever that manufacturers and technicians communicate and work closely, as allies, to produce and maintain an instrument that will continue to bring joy to all who listen and play. ■

Foundation Focus

Remembering Stephen S. "Steve" Jellen, 1917-1977

It is the fortunate and rare technician who has serviced one of the pianos that bears the name of Stephen S. Jellen. Much more common are the technicians who knew Mr. Jellen, partook of his knowledge, and delighted in his friendship.

Stephen S. Jellen of Stafford Springs, Connecticut, was best known as a master craftsman, a piano builder and rebuilder, and a consultant for the Pratt-Read Company.

His lifetime of achievement and his contributions to the advancement of piano technology led the Piano Technicians Guild Foundation to name its library and historic preservation fund in his honor. This Foundation Update provides an important opportunity to remind some members of Steve Jellen's legacy and introduce other, more recent members, to it.

Stephen S. Jellen, RPT

Born in 1917, Mr. Jellen worked briefly in a New England mill, served as a Medic in World War II and returned home to work as an apprentice in a piano shop in Massachusetts. He then opened his own shop in Stafford Springs where he built pianos, rebuilt pianos, and continuously honed his exacting craft.

In spite of only a grammar school diploma, Mr. Jellen had an insatiable thirst for knowledge. He invested $7,000 in the construction of his first piano, which he sold for $1500. He proceeded to built nearly 50 more "Stephen S. Jellen" pianos. Mr. Jellen was also a pioneer in the replacement of soundboards in the small rebuilding shop. He rebuilt hundreds of grand pianos largely by himself.

Mr. Jellen's extraordinary talent received national and international recognition. He was a charter member of PTG, serving as president of the Boston Chapter, and twice as President of the Connecticut Chapter. He served on numerous PTG committees and received many awards including the "Hall of Fame" and "Golden Hammer."

Mr. Jellen was a very popular instructor known for his down-to-earth style. He taught at countless PTG meetings, seminars, and conventions both as an independent instructor and in later years as a Pratt-Read representative and consultant.

According to his friend and protege, Wally Brooks, RPT, Mr. Jellen was extremely open with his knowledge and technical expertise. He was at the forefront of a few members in the 1960s to open the free flow of technical information in PTG that is prevalent today. To the many technicians who knew him, he was considered the "Technician's Technician."

As one of the most noted PTG members, many major articles were written about him, including a full page article in the *Wall Street Journal*, and feature stories in the *Hartford Courant* and in a foremost Russian magazine.

Stephen S. Jellen died on August 21, 1977. Wendell Eaton, PTG Past President, remembered him as "a craftsman, a friend, a humorist, a searcher, a dreamer! Perhaps one of the finest craftsmen in the world, but most important, a fine human being!"

Steve Jellen devoted his life to the pursuit of excellence in piano technology. The Piano Technicians Guild Foundation honors him in perpetuity through the naming of the Stephen S. Jellen Memorial Library

Foundation Focus

and the Stephen S. Jellen Fund for Historic Preservation.

You, too, may help preserve the legacy of Stephen S. Jellen and so many other fine technicians by contributing to the Piano Technicians Guild Foundation.

PTGF gratefully acknowledges the assistance of Wendell Eaton, RPT, and Wally Brooks, RPT, in the preparation of this article.

Welcome to Your Museum

The Piano Technicians Guild Foundation Board looks forward to welcoming you to Kansas City in July. The Foundation Museum and Stephen S. Jellen Library will be open for tours. Shuttle busses will be provided.

The Foundation Museum and Library serve as repositories for the tools and other artifacts of the piano technology craft. The history of the Piano Technicians Guild and the organizations that preceeded it are also one display. The Stephen S. Jellen Library houses the books that comprised the personal collection of William Braid White.

The Piano Technicians Guild Foundation helps build a brighter future by preserving and displaying the treasurers of the past. We hope that you will join us in viewing the rich heritage we all share as piano technicians.

Planned Giving —Leaving a Legacy

A planned gift is a form of giving for those who would like to make a significant contribution to ensure the future of the Foundation. It is also a way for the Foundation to gather assets that will provide income from investments earnings to support operations and current and future programs.

The most common form of planned giving is the bequest in a will that sets aside a specific amount of money or percentage of the remainder of the estate to be distributed to the Foundation. This part of the estate will not be subject to federal estates taxes. Naming the Foundation as the beneficiary of your PTG life insurance policy is one important form of planned giving.

Some other forms of planned gifts include the charitable reminder trust, charitable lead trust, charitable gift annuity.

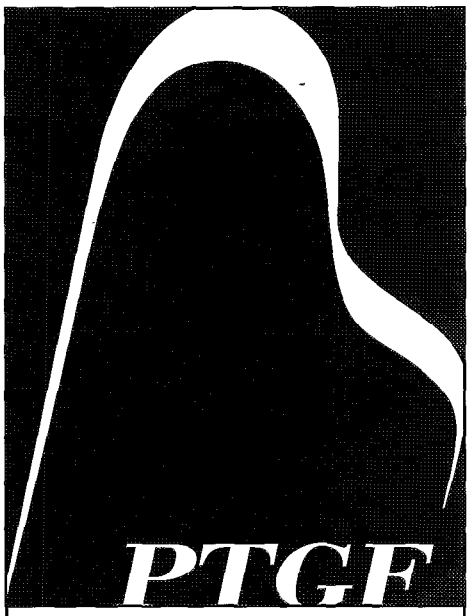
We encourage each member of the Piano Technicians Guild to consider how your planned gift might help perpetuate the work of the Piano Technicians Guild Foundation.

The Foundation does not provide any legal or tax advice. Individuals interested in making a planned gift should consult their attorney or tax advisor.

The complete list of contributors to the Piano Technicians Guild foundation will be listed in the 1999 Membership directory.

Financial Report

Beginning Balance (1/1/98)	$51,993.82
Income	15,851.45
Expenses	2,414.43
Ending Balance (12/31/98)	$65,430.84



The PTG Foundation Needs Your Help!

The history of PTG and its predecessors is in danger of being lost. As part of its mission, the PTG Foundation has taken on the task of preserving that history.

The work of collecting, organizing and preserving our past must be an ongoing part of our present. Your donation of money or historical materials will allow us to continue this important work. You may also designate the PTG Foundation as the beneficiary of your PTG death benefit. Contact the Home Office for details.

Honor a mentor, friend or associate, either living or deceased, with a tax-deductible contribution. Three contribution levels have been established:

- Corporate Sponsor ($1000 or more)
- Patron ($100 or more)
- Contributor ($50-$99)
- Supporter ($35)

To make a contribution, or for more information, contact:
PTG Foundation
3930 Washington
Kansas City, MO 64111
(816) 753-7747

Industry News

Baldwin Piano Appoints Duane Kimble CFO; Perry Schwartz Named Corporate Treasurer

Mason, Ohio — Baldwin Piano & Organ recently announced the appointment of Duane D. Kimble, 37, as chief financial officer. He succeeds Perry H. Schwartz, 60, who will assume the post of corporate treasurer.

Before joining Baldwin in August to oversee the company's strategic planning function, Mr. Kimble had been director of financial and operations analysis for Texas-based Equistar Chemicals, L.P., a leading producer of industrial chemicals. At Equistar, he was directly responsible for budgeting, strategic planning and overseeing the company's $300 million of annual capital expenditures. Prior to Equistar, he held a variety of key financial positions with Cincinnati-based Millennium Petrochemicals, Inc., the nation's largest domestic producer of polyethylene plastic.

Commenting on the appointments, Baldwin Chairman, CEO and President Karen Hendricks said: "We are fortunate indeed, to have attracted someone of Duane Kimble's caliber to succeed Perry Schwartz. In the brief time Duane has been with Baldwin, he has helped us work through some very complex strategic planning issues. His excellent leadership and financial planning skills will add much to our continuing efforts to improve manufacturing efficiency, further reduce operating costs, and meet new competitive challenges.

"With Baldwin's ongoing efforts to cut inventories, reduce receivables and improve cash flow, the importance of the treasury function has grown tremendously. We are very pleased that Perry Schwartz will be applying his considerable financial skills to the task of establishing and overseeing this critical function."

Mr. Kimble began his professional career in 1983 at Price Waterhouse, the global audit, tax and consulting firm where he served as a senior auditor. Baldwin's new CFO earned his accounting degree at Miami University (Oxford, Ohio) in 1983.

Dallas Chapter Joins Piano Industry Promotion

Always dreamed of playing the piano, entertaining friends, and being the star of the holiday sing-alongs? Well now is the perfect time to start.

The Dallas-Ft. Worth Piano Association in conjunction with the Piano Manufacturers Association International (PMAI) is hosting a contest here in the metroplex where you could actually win a brand new piano! Absolutely free!

The Dallas-Ft.Worth Piano Association is a group of hometown business people, who have collectively joined together to better the quality of lives through the enjoyment of the piano and piano music. We also wish to reward the efforts of those who wish to make the piano part of their lives for the first time.

All you need to qualify is a desire to learn, and be a first time piano student (no prior lessons). The contest will have three separate categories (kids, teens, and adults), with a new piano for the winner in each category.

Sign up at any member of the Dallas-Ft.Worth Piano Association's showroom by January 15, 1999, and the judging will be in August by a panel of area teachers and local personalities. ■

CALENDAR of EVENTS

February 12-14, 1999
CALIFORNIA STATE CONVENTION
Hyatt Regency, Long Beach, CA
Contact: Peg Browne (714)530-4768
11511 Wasco, Garden Grove, CA 92841

March 11-14, 1999
PA STATE
Holiday Inn Central Greentree, Pittsburgh, PA
Contact: Dan Sittig (724)266-5497
1209 May Street, Ambridge, PA 15003
website: members.tripod.com/pittsburghptg

March 18-21, 1999
CENTRAL WEST REGIONAL
Sheraton Plaza Hotel, St. Louis, MO
Contact: Wim Blees (314)962-5774
515 Poplar, Webster Groves, MO 63119

April 8-10, 1999
PACIFIC NW REGIONAL CONFERENCE
Provo Park Hotel
Contact: Vince Mrykalo (801)378-3400
694 North 100 East, Provo, UT 84606

April 23-24, 1999
FLORIDA STATE SEMINAR
Ft. Lauderdale Marriot
Contact: Mark Shapiro (561)451-2136
23360B S.W. 53 Ave., Boca Raton, FL 33433

April 30-May 2, 1999
NEECSO / New England Eastern Canada Seminar
Hotel Gouvernears, Quebec
Contact: Isabelle Gagnon (418)822-3550
6769 Royale, L'Ange - Gardien, QC G0A 2K0

July 21-25, 1999
PTG ANNUAL CONVENTION & INSTITUTE
Hyatt Regency Hotel, Kansas City, MO 64111
Contact: The Home Office (816)753-7747
3930 Washington, Kansas City, MO 64111

All seminars, conferences, conventions and events listed here are approved PTG activities. Chapters and regions wishing to have their function listed must complete a seminar request form. To obtain one of these forms, contact the PTG Home Office or your Regional Vice President.

Once approval is given and your request form reaches the Home Office, your event will be listed six-months prior and each issue until the month in which it is to take place.

Deadline to be included in the Events Calendar is at least 45 days before the publication date; however once the request is approved, it will automatically be included in the next available issue.

Associate Passes The Test

REGION 5

501 CENTRAL IOWA

THOMAS H. RUSSELL
1206 MICHIGAN AVENUE
AMES, IA 50014

Passages

In Memory . . .

William Aiken
Morehead City, NC

Robert Kissling, RPT
Las Vegas, NV

Steve Townsend, RPT
Columbus, MS

New Members Join In December

REGION 1

101 New York City

John P. Ford
417 Main Street
Peekskill, NY 10566

190 Southeastern Pennsylvania

Amy N. Hochstetler
1012 S. 47th Street
Philadelphia, PA 19143

REGION 2

212 Baltimore, MD

T. Michael Doy
456 Ruffian Court
Annapolis, MD 21401

REGION 3

752 Dallas, TX

Russell M. Ruckenberg
625 Elm Falls Place
Mesquite, TX 75181

771 Houston, TX

R. Scott Kuhn
1437 Cortlandt
Houston, TX 77008

REGION 4

462 Indianapolis, IN

Robert S. Staley
10107 Guilford Avenue
Indianapolis, IN 46280

467 Indiana

Michael D.Dauscher
4502 Ricker Road
New Haven, In46774

489 Lansing, MI

Brian C. Taylor
210 Raleigh Place
Lennon, MI 48449

REGION 5

511 Siouxland, IA

Gary A. Dindayal
502 Barnes Street
Ida Grove, IA 51445

REGION 6

851 Phoenix, AZ

Marjoric J. Brandis
8580 Deal Drive
Flagstaff, AZ86004

Gregg S. Geiger
17374 N. 89th Avenue, #1524
Peoria, IL 85382

857 Tucson, AZ

Richard P. Woodruff
5554 E. Hawthorne Street
Tucson, AZ 85711

905 South Bay, CA

Herbert E.Lurgenstein
3301 E. Hill Street, Ste. 408
Signal Hill, CA 90804

Levon Terteryan
212 W. Garfield Avenue, #111
Glendale, CA 91204

951 Santa Clara Valley, CA

Cameron A.Cordero
900 Henderson Avenue, #62B
Sunnyvale, CA 94086

REGION 7

001 Calgary, AB

James V. Hough
Box 1842
Camrose, ABT4V 1X7
Canada

Valerie A.Ormerod
146-20th Street West
Prince Albert, SK S6V 4G2
Canada

1999 PA State Auxiliary Convention Program

We will soon be celebrating the final Pennsylvania State Convention of the century in Pittsburgh, March 11-14, 1999. To recognize this festive occasion, and as part of the Auxiliary program, we have adopted the theme of "Honoring your Partner." Currently, plans are underway that may be different from any other Auxiliary event in the past. We are providing an opportunity for all piano technicians to treat his or her partner to an escape weekend of pampering, total relaxation, fun and spending time together in one of the most beautiful cities in America! Kicking off this event, Friday, March 12, 1999, will be a shopping excursion from 10 a.m. until 2 p.m., or a tour of Pittsburgh on Pittsburgh's Molloy's Trolley. Either attraction will include lunch. Upon returning, all participants will be treated to a glamour make-over, and for further pampering treatment, you will receive a Satin Hand treatment. This should prove to be beneficial as you prepare for the banquet Friday evening at 6:30 p.m., which promises to be an elegant gala. We want you to be the Belle of the Ball!

On Saturday morning you will attend a Creative Memories clinic from 9:30 - 11:30 a.m. This class will be conducted by a fine teacher, and outstanding speaker. She will teach you how to preserve those precious memories of pictures and memorabilia. This is definitely a hands-on class. Please bring at least one pack of pictures. This promises to be a fun and entertaining time! Lunch and the afternoon will be your free time. However, to help prepare you to be reunited with your partner Saturday evening for an evening in downtown Pittsburgh, we have arranged for you to receive a complimentary massage from a certified massage therapist. After this relaxing massage, and as the grand finale, the Pittsburgh chapter cordially invites you to allow us the most distinct honor of hosting you in our great city. We will unite for an evening of fun at Station Square in downtown Pittsburgh. Station Square is a converted Pennsylvania Lake Erie train station that now boast of national notoriety. Whether a horse drawn carriage ride, or "The Funny Bone Comedy Club," or "Rod Woodson's Sports Lounge," you will be able to experience it all at Station Square. With over 70 shops, restaurants and night spots in one concentrated area we assure something for everyone. In addition, accessible from Station Square is the Pittsburgh Incline that transports passengers up to Mt. Washington's observation points, which over look the city skyline. This is absolutely breathtaking. The Pittsburgh chapter will provide on-going bus transportation to and from the station from 6:30 p.m. - 1:30 a.m. The itinerary has been planned – all that is required is your attendance to this memorable escape weekend to remember.

We have given meticulous attention to detail and thorough planning for this convention. We are aggressively promoting the event with an expectation of record breaking attendance. As a result, we strongly recommend advance registration. We look forward to seeing you.

Phyllis Tremper
PTGA President

AUXILIARY exchange

DEDICATED TO AUXILIARY NEWS AND INTERESTS

Something for Everyone in KC

We finally have reached the shortest month of the year. I hope all of you have survived the rush of the past holiday season. I would like to address my column this month to the widows of tuners. I received a letter from a faithful member several months ago asking if I would have, for lack of a better word, a clearing house for the widows to write to me, and I could put them in touch with other widows who want to come to convention in Kansas City, and do not want to be alone. This way they could share hotel rooms and just have each other to eat with, and travel the city and the tour. I would really like to let the widows know that we would really like to have you all there with us, as we will be going through the museum at the PTG Headquarters, and also I have a very nice tour planned for Thursday, the first day of the PTG Institute.

We will be going on the tour on Thursday, meeting everyone and getting to know each other, and then have our meeting on Friday. Luncheon, and scholarship winners recital on Friday afternoon. Then on Saturday, I have arranged for us all to go through Hallmark, and from there we can go to Crown Center to shop 'til we drop.' That way you can come back to the hotel on Saturday anytime you want. All of these places are within walking distance of the Hyatt Hotel.

So please, everyone, including widows, please start saving your pennies and enter your registration early before the prices change, as they will go up quite a bit after the deadline. The tour price will be a little more this year, as we are traveling to Independence, and also the price of the Mystery Luncheon has gone up. Also, there will be an advanced price after the deadline so please make sure to mail your registration early.

Let me know as soon as possible, you widows who are going, so I can arrange for all of you to room together. Saves money that way!

Also, please note, especially all of you on the Eastern Seaboard, to read the following article about next month's PA State RPT Seminar. They are going all out to make us feel at home. It sounds like a wonderful program for us, so please consider being there. I'll see you there. I don't want to miss this event.

CLASSIFIEDS

Classified Advertising rates are 40 cents per word with an $8.00 minimum. Full payment must accompany each insertion request.

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MOTHER GOOSE TOOLS Delivered USA. Brass String Level-Level $25; Hammer Filing-Voicing Tray $25; Hammer Fitting Block $15; Capstan Regulating Pliers $25; Slotted Screw Starter $15. 1-800-343-5257. imatunr@primenet.com

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Deadline dates for advertising in the Journal

May	March 17	September	July 14
June	April 14	October	Aug. 18
July	May 12	November	Sept. 15
August	June 16	December	Oct. 13

TECH GAZETTE
YAMAHA
February 1999

Sluggish Dampers Anyone?

One of the causes for a sluggish grand damper is incorrect bends in the damper wire below the damper guide rail. A system for checking these bends exists, and is very simple to use.

There are two bends in the portion of the wire beneath the damper guide rail. These bends will properly align the wire between the damper guide rail hole and the hole in the damper lever wire flange. If either bend is incorrect, it will force the wire to one side and cause friction by pressing on one side or the other of the damper guide rail bushing.

The lower bend aligns the end of the wire with the hole in the damper lever wire flange. If it is not at the correct angle, the wire will be pointing at some other direction than "straight down into the hole" of the damper lever wire flange. To test this bend, loosen the damper wire screw and move the lever up and down. If there is no resistance, and the damper lever wire flange slides easily up and down the wire, the angle of the bend is correct.

The second bend from the bottom of the wire is correct when the wire just above the bend "goes straight up and into the damper guide rail hole." Testing can be done by slowly moving the damper pedal while looking at the dampers. Carefully observe if the damper in question stays equally spaced between the dampers on either side, or if it "travels" to the bass or treble. If it stays equally spaced, the angle of the bend is correct and any other angle will cause the damper to travel as the pedal is moved.

— LaRoy Edwards

To correct either bend, place wire bending pliers (the type with concave and convex jaws) directly on the bend and change the angle the smallest amount possible. Try the test again and continue to make the correction in small increments until the standard is met.

To Summarize:

- To check the lower bend, loosen the screw and check if the damper lever wire flange slides freely up and down the wire.
- To check the 2nd bend, move the pedal up and down and confirm that the damper in question does not "travel".

LaRoy Edwards
Consultant—Yamaha Keyboard Division

LaRoy joined Yamaha in 1962 as National Piano Service Manager in a part-time position. As Yamaha grew, he became the full time Piano Service Manager in 1969 and in 1982 was promoted to Service Division Manager. In 1984 LaRoy moved his family to the San Francisco area and became a Piano Consultant for Yamaha. In this capacity he focuses his vast energy to the Keyboard Division, especially in the area of technical and sales education for both acoustic and Disklavier pianos.

LaRoy has held numerous offices both locally and nationally for the Piano Technicians Guild. He has been awarded PTG's "Member of Note, 'Hall of Fame,' and 'The Golden Hammer Award." LaRoy has also received numerous Presidential Citations from the Piano Technicians Guild.

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