

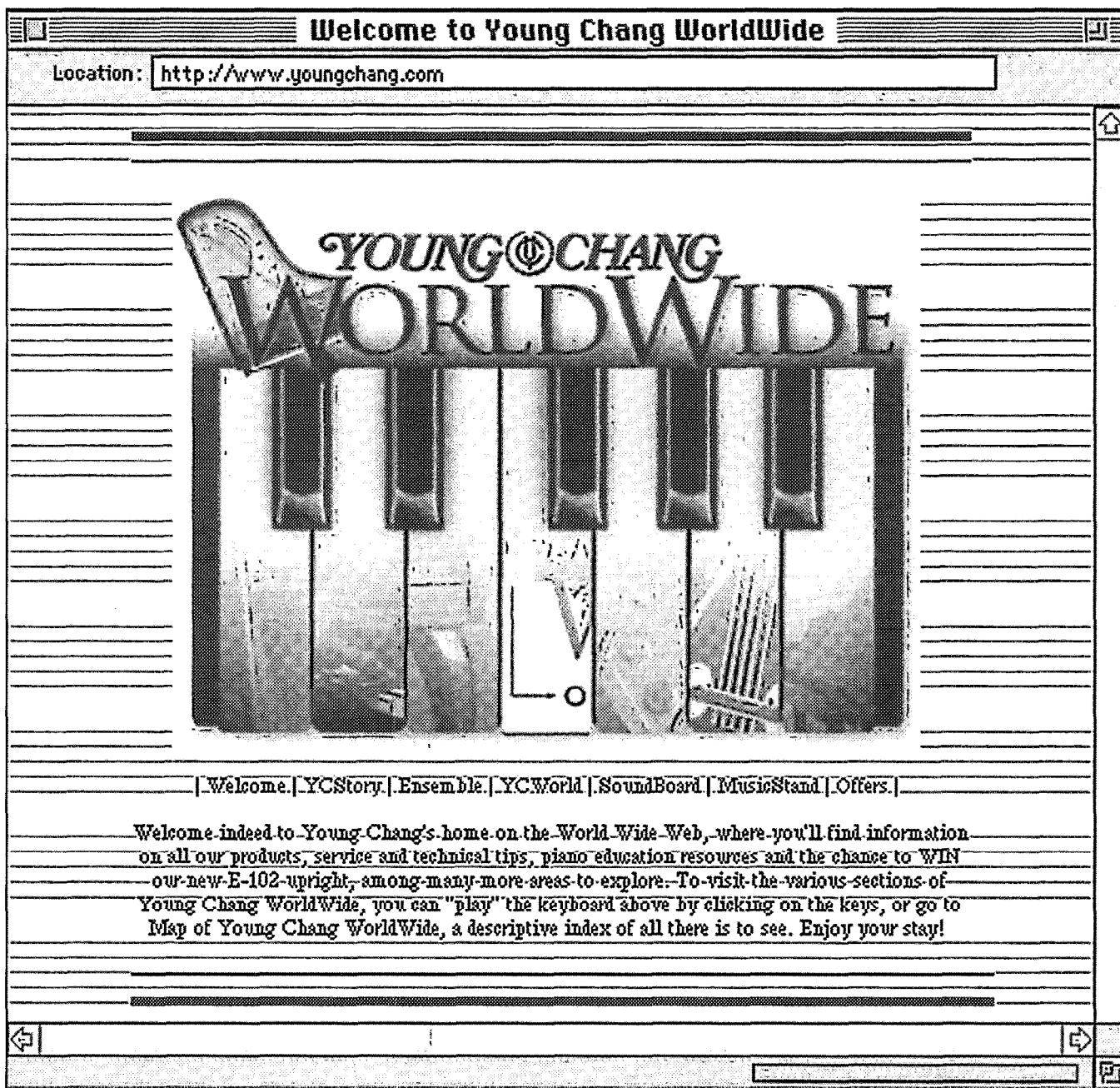
A close-up, high-angle photograph of the internal mechanism of a piano. The image shows numerous strings of varying thicknesses, some copper-colored and some silver, stretched across a light-colored wooden frame. In the lower right, the hammer flippers are visible, showing their stepped arrangement and the points where they meet the strings. The lighting creates strong shadows, emphasizing the three-dimensional structure of the instrument's interior.

PIANO TECHNICIANS
Journal

Official Publication of the Piano Technicians Guild

July 1996

Vol. 39 • #7



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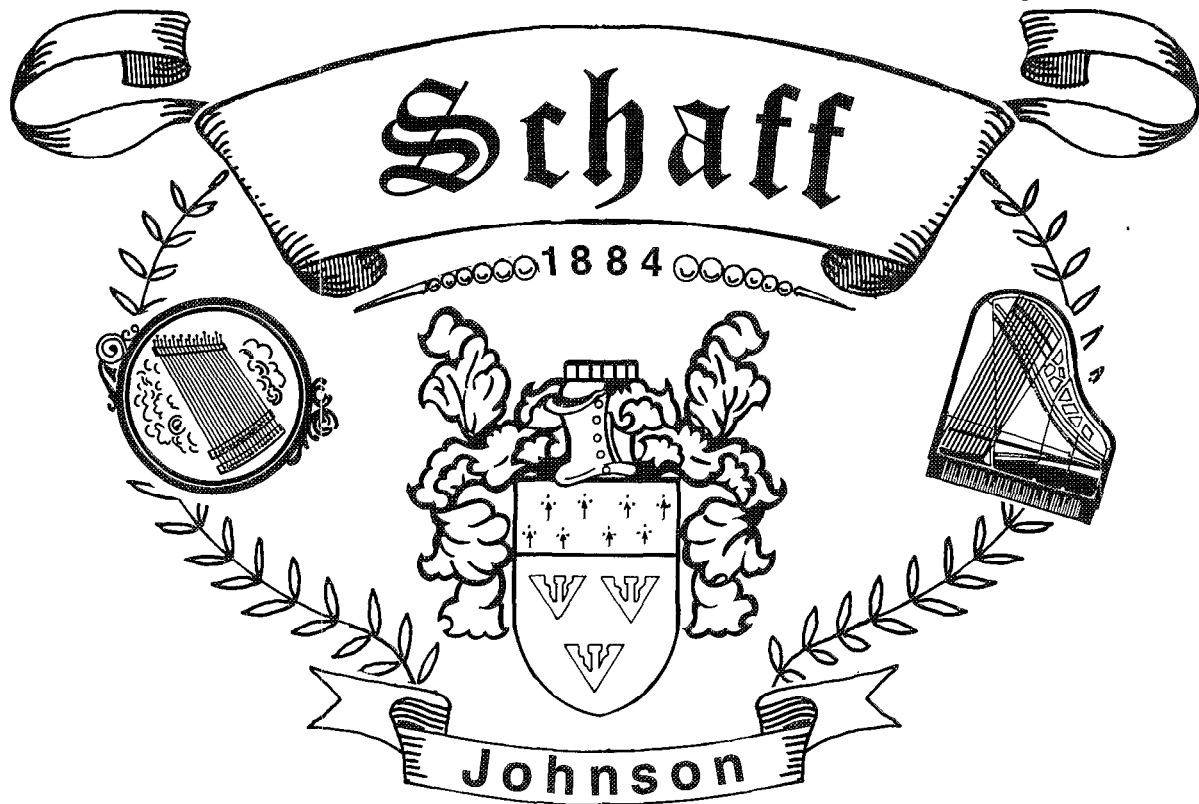
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Editorial Perspective

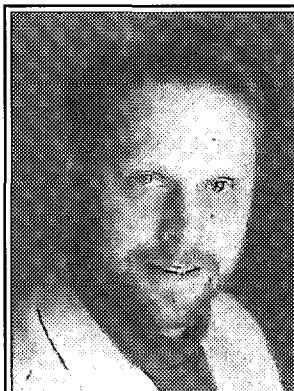
PTG-L: Our Lane on the Information Super-Highway

For the past several months, members of PTG have had a forum for trading ideas about the Guild via the Internet. While the "pianotech" listserv has been available for a much longer time, it is open to everyone with an interest in piano technology. By last fall it had become apparent that PTG-related discussions belonged in a different venue, and, through the good offices of Ron Berry, PTG-L was created to provide a place on the Internet where PTG members could discuss political and organizational topics. At last count, more than 120 PTG members had subscribed to PTG-L.

Says Berry, "I just think there should be a nice thanks to Prairienet for hosting the list. Prairienet is run by the graduate school at the University of Illinois and is located in Champaign, Ill. They have been gracious enough to provide us with Web Server space for the Piano Page and with the list processor for PTG-L, all at no charge."

Not all has been rosy on the new list, of course. We've experienced the typical problems associated with rapid-fire written communication: misunderstandings due to the lack of visible body language and facial expressions, and the lack of audible tone-of-voice cues; individuals taking pot-shots at others because they feel somehow "safer" doing it through the written medium than they would in a face-to-face encounter. Certain political disagreements which began well before the inception of PTG-L have continued to provide grist for this new mill. Sadly, it was by PTG-L that many of us learned of the resignation of Fern Henry from PTG.

Despite the negatives, however, PTG-L remains a vibrant and vital tool for all of us who are interested in PTG and its future. As members become accustomed to the assets and liabilities of this electronic medium, the forum begins to move in positive directions. Berry said, "The PTG-L list has a chance to keep



Steve Brady, RPT
Journal Editor

members in touch with each other constantly. It has a tremendous potential to allow for the exchange of ideas among members. Bylaws issues can be discussed among members before dealing with them in Council. Chapter officers can share ideas on how to make their chapters run better."

Jeffrey Hickey, a newly minted RPT from Oregon, has become an active member of the list.

He writes, "I have been hoping that we might encourage more members to sign on to the PTG-L list. We might have better informed delegates to Council if more folks were aware of the info available here. Currently, the members of the list are discussing a variety of topics ... but mainly the list is trying to find an understanding of the problems our Guild faces. Want to have a voice in the discussions regarding the future of the Guild? There is a place to be heard. Join us!"

If you have a computer, a modem, and Internet access through America Online, Compuserve, Prodigy, or any number of other providers, subscribing to PTG-L is easy. To subscribe, send an e-mail message to this address: listproc@prairienet.org

Your message text should read:
subscribe PTG-L Yourfirstname
Yourlastname

For example, if I were subscribing, I would write:

subscribe PTG-L Steve Brady

The subscription is free, and will provide you a conduit to other concerned members of PTG. I encourage everyone to take an interest in the future of the organization and to let your ideas be heard. ☐

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

Steve Brady, Journal Editor

Address: 205 McGraw Street
Seattle, WA 98109

Fax: 1-206-285-7610

E-mail: sbrady@u.washington.edu

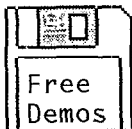
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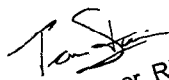
Dear Ralph:

When I decided to expand on the services I provide to my clients, I set upon finding a rebuilder who would compliment my 'obsessive' attention to detail. I had a well-equipped shop and full action rebuilding skills, but I found myself limited in the time I could devote to the rebuilding services many of my clients required.

I have to admit, although you came highly recommended as one of the most knowledgeable rebuilders in the business, I was not prepared for what I heard and saw at our first meeting. The highest quality of workmanship was evident in every step of restoration I viewed. I felt confident then, as I do now, that any work performed there will have the same attention to detail with the same pristine results.

If anyone has the opportunity, as I did, to view examples of your bridgework at past conventions, I'm sure their reaction will be similar, one of disbelief. I felt sure that what I saw was 'just for show', but how wrong I was. Plates that look like candy, soundboard fitting that is exquisite, and blocks which have an excellent feel to them, no exceptions. Need I say more. I will highly recommend your shop to anyone interested in high-level, consistent, quality work.

Sincerely,


Tom Sterner, RPT

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17 — Another Perspective — On Humidity-Related Tuning Instability
Darrell Fandrich, RPT, (the other Fandrich) presents experimental evidence to explain why pianos go out of tune the way they do, and what we can do about it.

22 — Touch-up Tuning
Contributing Editor Chris Trivelas, RPT, broaches a subject seldom talked about.

24 — Down to the Wire
Ray Chandler, RPT, presents useful information about how piano wire is made and how 16-gauge wire may not always be what you think it is.

26 — Hammers & Tone
 RPT Nick Gravagne returns with a look at hammers and tone.

28 — Victorian Temperament
Noted tuner and author Owen Jorgensen, RPT, explains the theory and practice of Victorian-era temperament tuning.

32 — Behold The Upright
The latest in RPT Don Valley's series on vertical piano rebuilding deals with dismantling the piano and repairing the soundboard.

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PTG-L: Our Lane on the Information Superhighway
By Steve Brady, RPT

6 — President's Message
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35 — PACE Lesson Plan
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8 — Letters

More on Tuning Instability, Responding to Fairchild, more on Pianos for Cuba.

10 — Tips, Tools, & Techniques

Another method for repairing elongated balance holes, a nifty way to play the key while you're away from the keyboard, using reflectors to make tuning in large spaces easier, and another way to store music wire in humid climates.

12 — Q & A

How do you remove dripped candle wax from pianos? Troubleshooting damper and action problems; addresses of foreign piano parts suppliers.

38 — Marketing Ourselves

Marketing Committee Chairman Bob Russell, RPT, presents Business Tips from RPTs across the country.

IN ADDITION

40 — Grand Illusions

41 — PTG Review

Articles and information dedicated to the news, interests and organizational activities of the Piano Technicians Guild. This section highlights information that is especially important to PTG members. This month: Ethics in Our Profession; The New Piano — Are We Killing the Industry?; Dearborn Convention Update; PTGF Benefactor of \$10K Memorial; Grant for Continuing Education; Yamaha's Little Red Schoolhouse Celebrates 25th Anniversary; Industry News; 1996 Directory Corrections; Events; Reclassifications, New Members; Associates Seminar in Dallas; and PTGA Nominating Committee Report.

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Journal

Volume 39 • Number 7 • July 1996

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PTG Growing into the Future

This is my final message as President. I look back at the accomplishments of the past five years of service on the Board with satisfaction. Today, the PTG is a more professional organization, and is receiving greater respect within the industry. As the PTG has grown professionally and matured as an organization, those who want the PTG to remain unchanged are causing a small amount of controversy. Change is never easy, but it is essential if we are to adjust to the trends within the industry, and as we take advantage of the opportunities that are presented. The PTG is a better organization today because of these changes.

In 1992 the investment of reserves in the purchase of our *Home Office Building* laid the foundation for sound financial planning. During the past two years, rebuilding our financial reserves has been a top priority. This year Secretary/Treasurer, **Jim Coleman, Jr.** will again deposit to our reserve funds an amount much greater than required by the bylaws. In addition, non-dues income is up significantly from the sale of educational and marketing products. Building our financial reserves through sound *long range financial planning* and careful monitoring of expenditures is essential if we are to survive and grow.

Member benefits have increased dramatically. The *Marketing Program* has developed tools that enable us to project a consistent image to the public. The *PACE Program* has supplied information to help each of us refine our competency and to learn new skills through structured lesson plans. *Exam Study Guides* are available to provide information to Associates to encourage and aid reclassification to RPT membership. *Journal Reprints* are available on topics from general repair to soundboards. A comprehensive *Vertical Regulation Curriculum* is available to schools, chapters or individual members. Work is currently underway on the *In-Home Repairs Curriculum*. The *Piano Technicians Journal* has improved both in content and format. Comprehensive *Member Surveys* have helped identify the needs of members. I want to say a special thank you to our former member and President, **Fern Henry**, for



PTG President
Leon Speir, RPT

being the visionary to conceive and develop these invaluable programs.

Many chapters and members now recognize the need to promote the use of the piano. They have become involved in their local *SPELLS (Study of Piano Enhances Learning and Life's Success)* programs sponsored by the National Piano Foundation. Interaction with all segments of the industry has improved as our professional image improves.

Marketing our services and developing a demand for consistent piano care is a key area of a *Long Range Planning Program*. This year for the first time Council chose to fund a formal approach to Long Range Planning through the marketing program. The Board took the preliminary steps to formalize Long Range Planning in two sets of meetings earlier this year. Council will be evaluating the Board proposal in the *Vision 2001* booklet at the upcoming session in Dearborn. Thus we have begun the process of identifying and constructing the programs to take us into 2001.

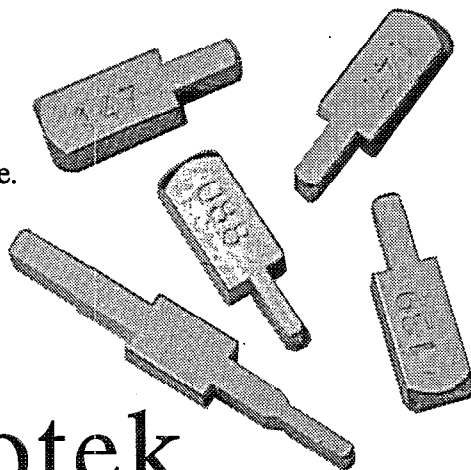
On a personal note, I want to thank you for allowing me to serve on the Board of Directors and as your President for the past two years. It has been a pleasure to serve and a growth experience that I will always value. I hope that I have also been of benefit to you and to the PTG. It is essential that we work together for the common good of piano technicians if we are to continue to be a viable organization that wins the respect of the industry and our clients. The upcoming elections in Dearborn are crucial to continuing the positive course we are pursuing. Carefully evaluate all the candidates running for office to make an informed decision on your future leaders. The future direction of PTG depends on you.

A handwritten signature in cursive script that reads "Leon Speir".

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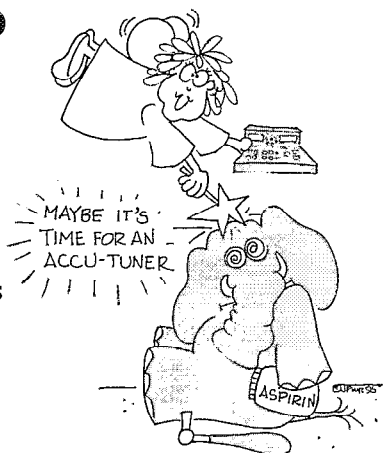
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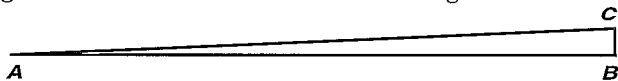
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More on Tuning Instability

I'm glad to see another opinion on why pianos go out of tune the way they do. But, Mr. Sturm lists the soundboard as the culprit, which I reject. True, soundboards are flexible, but the strings could push the soundboard down rather than the soundboard pushing the strings up.

The tension of the strings may be a factor, the lower the tension, the easier to be affected — there are other factors, the strings are longer and fatter, I will address the longer factor.

If the soundboard rises throughout the piano as Mr. Sturm suggests, I would consider the shorter strings most affected.



AB is 40 inches, AC is a fraction longer, BC is a fraction caused by soundboard rising — the deflection is small compared to below:



AB is 6 inches. BC is approximately the same as above. The deflection is great compared to above. Come on now! Someone out there should experiment and give facts, not opinions. That's my opinion.

— Ken Churchill, RPT

Responding to Fairchild

Over my 39 year membership in PTG plus a few more, in NAPT and ASPT, President several times of the San Francisco Chapter, and Chairman a few years of the California State Board, I have seen a lot of fault-finding, I have decided to do some myself.

I feel compelled to respond to Steve Fairchild's article in the March 1996 edition of the *Journal*, "The Fairchild Charts."

The remarks regarding my publication, *Piano Rebuilders' Handbook Of Treble String Tensions*, are not all accurate and in fact are very derogatory and upsetting to me, and I am sure to the supply houses that sell the book and the many technicians who have purchased and used this fine publication.

The statement regarding the book, "which contains some inaccuracies and are so large as to be overkill." The errors in the Handbook are in the percentages of the tensile strengths printed due to an error in page location programming, a correction chart is furnished with each book and shows on one page the percent of tensile strength at each wire diameter tension. If one desires to design his scale using a percentage of breaking point as Mr. Fairchild suggests, they can easily confirm the wire diameter using this chart.

Regarding the remarks about inharmonicity, the formula was correct at the time of printing the book and I think my book teaches very well the relationship between inharmonicity and wire diameters, tension, and length and that is why they exist.

Piano Rebuilders Handbook is accurate in string tension relative to wire diameter, pitch, and length to five decimal places, requires no computer to use and no calculations, it is very simple to use once you know the distance between the sounding length termination points.

I like very much the rest of the text in Mr. Fairchild's article, but I am sure my book is easier to use, faster, and is quality as to text, paper, printing and binding.

Fine technicians have told me it is one of their most valuable tools.

— James H. Donelson, RPT

Pianos for Cuba

Some of our readers may recall an article written last year entitled "Tuning for the Enemy." The author, Benjamin Treuhaft, told the story of his first visit to Cuba and subsequent campaign to organize pianos and materials to be sent there. Our chapter, in Boulder, Colo., arranged to have some parts sent and I visited Cuba early this year.

Getting to Cuba is not easy for Americans. Since the early 60s our government has maintained a trade embargo on Cuba. Direct flights from the United States to Cuba have been non-existent or at least only offered to certain persons under special circumstances. After some investigation and reading various travel magazines, I was determined to fly to Havana from the Bahamas, which offered flights a couple of times a week.

Entering Cuba as a tourist is no problem. The Cuban government is very accommodating to tourists, since Cuba is now hard-pressed for hard currency and only accepts U.S. dollars from foreign visitors, who now flock in from all parts of the Americas and Europe.

Once in Havana, I located the piano workshop where restorations were taking place, at the Institute Superior de Artes, which is also a training center for piano technicians. A number of pianos that Mr. Treuhaft was able to have delivered there are undergoing restoration.

Pianos in Cuba have their own set of problems because of climatic conditions. On the positive side many older instruments still have good resonance and sustaining power because the island humidity is relatively stable year after year. Soundboards and pinblocks do not suffer from the kind of climatic changes that do so much damage to pianos here at home. On the other hand, humidity takes its toll on pianos, and oxidation of strings and metal parts is a constant problem. Then, there is the issue of tropical termites, who seem to love to feast on pianos in that part of the world. I have suggested that instruments in constant use, which are played regularly would not be hospitable to these creatures because the sound waves will drive them out.

During my visit I made contact with officials connected with the Institute, who were most interested in the existence of the PTG and wanted to know about possibilities of receiving training from our group. As an individual, I offered my assistance and advice and promised to make inquiries among the PTG membership regarding the institution of training programs for piano technicians in Cuba.

I will argue the merits of why I think it is important for us as an organization to establish and maintain a cultural contact with Cuba.

In Cuba today there is an enduring Creole Culture, which has had a profound effect on the music there since the beginning of the 19th century. For example, jazz, the music that changed the world, was largely of the Creole culture of New Orleans.

I submit that it is in our interest to revive the musical aspects of this culture in our own time and place, and watch its effect on music, piano playing and the demand for piano technology. Cuba has a vital connection for our American musical culture

Continued on Page 16

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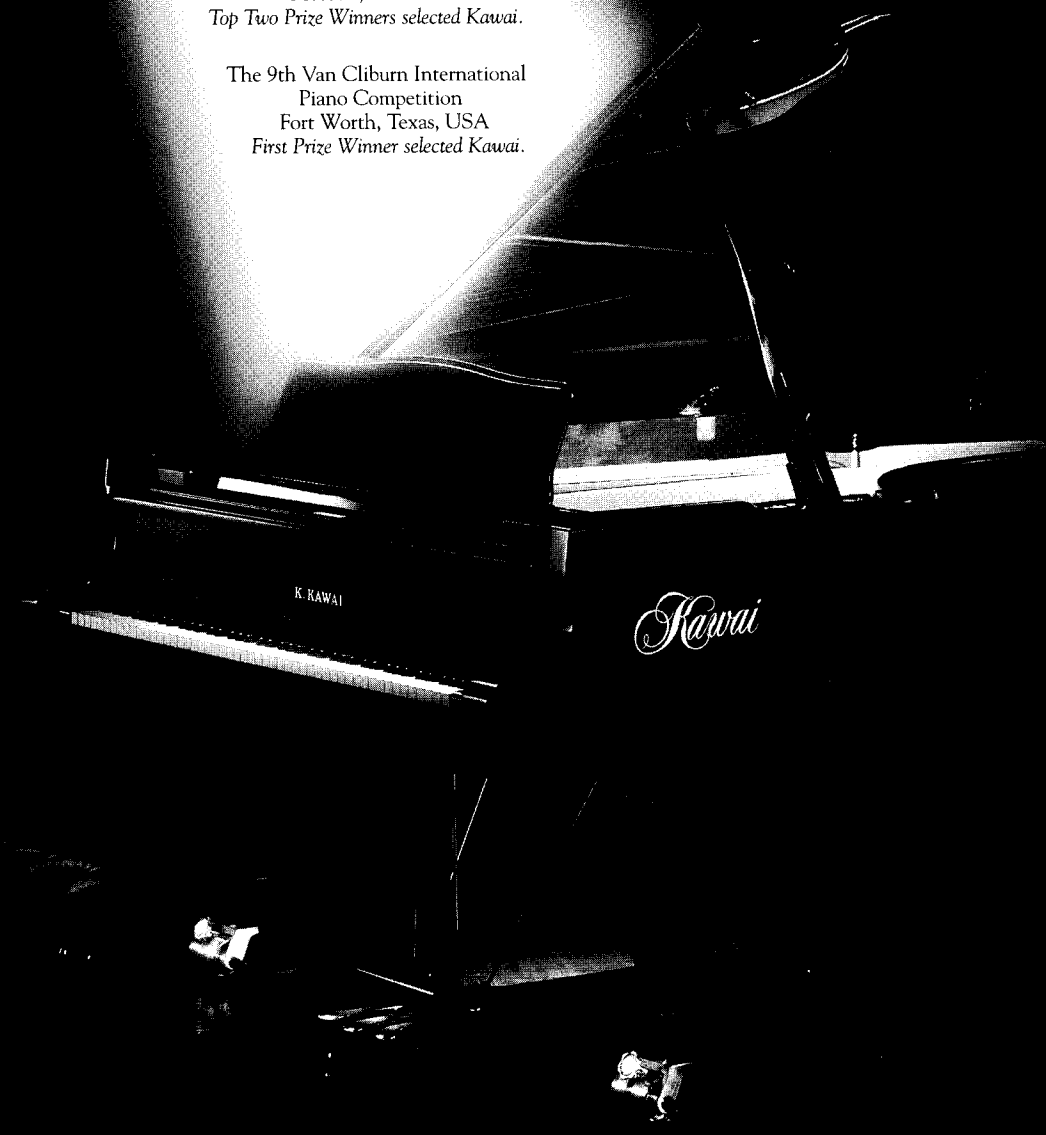
The 45th Ferruccio Busoni
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First Prize Winner selected Kawai.

The 11th Santander
International Piano Competition
Santander, Spain
First Prize Winner selected Kawai.

The 2nd Hamamatsu
International Piano Competition
Hamamatsu, Japan
First Prize Winner selected Kawai.

The 10th International
Tchaikovsky Competition
Moscow, Russia
Top Two Prize Winners selected Kawai.

The 9th Van Cliburn International
Piano Competition
Fort Worth, Texas, USA
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I've found that the music stands that are commonly placed around the area can be used as reflectors to bounce the sound of the piano immediately back to my ears, making it much easier to tune. This is often much more practical than moving the piano up against a wall (vertical piano) for the same effect. Portable chalkboards can also come in handy for this.

— David Durben, RPT

TT&T

Balance Rail Hole Repair

I saw the recent lengthy discussion in the *Journal* concerning balance rail hole repairs (March 1996 *PTJ*, pp. 14-17). Despite the number of different solutions offered I did not see my own favorite which has served me well, so here it is.

I use C.A. glue. Any of the currently available types will do but I recommend the thick viscosity.

If the hole is just a little too large I dip the stick end of a Q-tip into the glue and then spread it around the inside of the hole. If the hole has severe distortion in one direction, I hold the key vertical with the distorted part of the hole downward and then put a drop into that part of the hole and let it solidify. This moves the hole back to where it should be.

I have two choices for sizing the hole. One choice is to use a shallow taper reamer and ream the hole out to the correct size. If I am doing many holes I put a bit of masking tape around the ream to mark the correct depth. This will ensure a round hole but the hole will be slightly larger at the bottom than at the top, technically the wrong way round. The other choice is to use a chain saw sharpening file to trim out the hole. The file is round and has fine teeth and is slightly smaller than a balance rail pin.

The C.A. glue readily penetrates the damaged wood and forms a firm bearing surface. The sizing should be a snug fit to prevent rattling. The repair is quick and permanent. If any glue gets onto the bottom of the shoe it can be filed or sanded off.

On another related subject, sometimes when rebushing the balance rail button, the bushing cloth protrudes above the top of the bushing. While a sharp knife can be used to trim off this excess, it tends to leave a slightly ragged top to the cloth. I have found that straight-edge flush-cut, nail clippers do a quick and good-looking job at trimming off this excess cloth.

— Chris Day

TT&T

Storing Music Wire in Humid Climate

I have just reviewed your suggestion regarding protecting strings, etc. from rust in a humid climate. This is a continuing problem in East Texas and my solution is somewhat simpler than yours and does not require any electricity. I have two large plastic storage boxes which close fairly well in which I store my wire. To combat the moisture I also keep a food storage container in whose top I have cut a hole to accommodate a plastic yogurt container with no top. After punching some small holes into the bottom of the yogurt container I placed calcium chloride in it and placed it into the top of the food container. The calcium chloride captures any moisture in the box and it then drips into the food container which serves as a reservoir. This has to be drained every few months and the calcium chloride has to be replenished but the system is safe, simple and after two years appears to be totally effective.

— David Moore

TT&T

Solo Troubleshooting

Here's how to listen for a buzz when you're on your back under a grand, or standing behind an upright, while playing a key in the front of the piano (see illustration).

1) Tape a dowel to the "buzz-causing key."

• Scotch® or masking tape works.

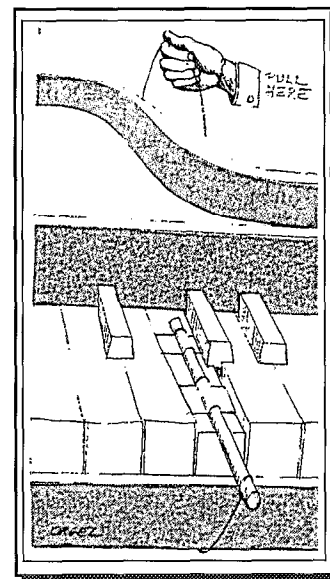
• Extend the tape down the sides of the key a bit.

• Extend the dowel beyond the keyslip a bit.

2) Tie a long string to the end of the dowel.

3) Draw the string under the piano, and tug.

— Ken Orgel, RPT
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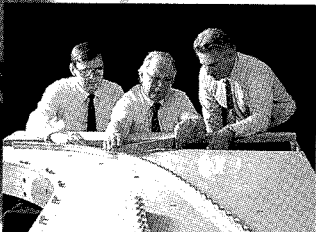
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Q

Wax On . . . Wax Off!

This is a new one on me. A customer spilled a votive candle on the piano, so there's now wax on the case and keys. I haven't seen it yet, she just called. I have no idea how to clean off the wax without harming either surface. Has anyone had any experience with something similar?

— Bob Simmons, RPT

A

From Rory Fader, RPT

Bob, I have in my hands a great product called "Goof Off." It takes off candle wax, marker and pen ink, crayon, lipstick (not recommended for use on your lips!) and much more. It can be used on fully cured varnished and oil-based painted surfaces, solid vinyl upholstery and baseboards, fiberglass, wood and numerous other places. It cautions that it can damage many plastics (piano keys?) and some automotive paints. Test in an inconspicuous place first. Made by Atlanta Sundries, Lithonia, GA 30058. I picked up my 5 oz. can in a local hardware store. Hope this helps you.

A

From Steve Brady, RPT

My concern about "Goof Off," which I have used to clean up latex paint "goofs," is that it might attack the lacquer finish of a piano and/or the plastic keytops. I've recently gained a new respect for *turpentine* as a solvent. Mixed in equal parts with white vinegar and linseed oil, and applied with 4/0 steel wool, it's great for removing greasy, waxy buildup from piano finishes, as well as that pernicious masking-tape residue left on the dampers of a "prepared" piano. And yes, it will help you get that candle wax off the keys and case of your client's piano.

A

From Mark Story, RPT

My preference is VM&P (Varnish Makers' and Painters') naphtha. It has about the same solvency as paint thinner or turpentine, but less odor and doesn't leave a white haze. It also does a pretty good job of cleaning action parts and bushings.

Q

Troubleshooting Problem

Someone (whose identity I do not know) on the list referred a customer to me, and I am grateful. The customer inherited a 1948 vintage Conover Cable console from her mother. It was unplayable since the plastic parts were crumbling. Otherwise, the piano is in as good a shape as a piano of this quality can be. This piano also has aluminum rails (at least metal of some kind).

I took on the job of replacing the plastic parts: complete wippen assemblies, hammer butt flanges, and damper levers with flanges. I fully regulated the action throughout. All went well except that when I was done, A61 produced very little volume, and the key felt as though it had no resistance.

Usually I can solve regulation problems fairly quickly, but this one has me baffled. The key dip is normal. The wippen, hammer, etc. look consistent with their neighbors (I wondered if a part was abnormal, but I could not identify such). I traded wippen assemblies, and the problem remained.

When the jack was regulated to escape 1/8 inch from the strings (as all the others), it did not escape from under the hammer butt. If I regulated it to kick out as far as the others did (which required about 4 complete turns on the regulating button), then the hammer hardly contacted the string at all, and the top of the jack (when kicked out) seemed to be lower than its neighbors.

I worked on this "little" problem for 2 hours and finally left. If anyone can give me a new suggestion (probably some little thing I overlooked), I would appreciate it, and I will go back and fix the suffering A61.

— Arlie D. Rauch

A

From Ed Hilbert, RPT

I suspect your problem is not in the wippen assembly but rather the key itself. It sounds to me like a key that is half broken at the balance hole. It is still strong enough to look okay, but when depressed bends under the weight of the wippen/hammer assembly. Try holding the key down behind the balance rail hole and then press on the front of the key. Does it bend? CA glue can be a nice quick solution to this problem. Or regular glue with a longer drying time. Good luck.

Continued on Page 14

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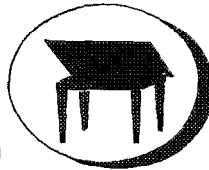
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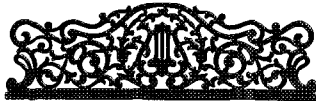
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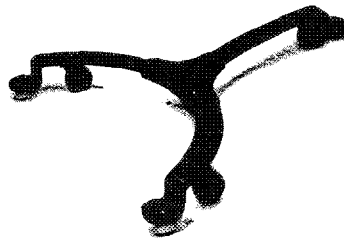


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Continued from Page 12

A

From Newton Hunt, RPT

- 1) Check to see if the key is split at the center bushing.
 - 2) Remove the butt and check it carefully.
 - 3) Switch butts to see if the problem moves.
 - 4) Check to see if the bridle strap is taut when the key is at rest.
 - 5) Check to see if let-off button felt is firmly attached.
 - 6) Check pinning of jack.
 - 7) Check to see if let-off rail is too close to jacks or if the liberty rail is too close to the jack (if it has one).
- These may not be the problem but in exploring these possibilities the culprit should appear.

Q

Stubborn Damper Problem

I've got a frustrating harmonic that won't go away. On one of the performance S&S D's the 8th partial of F2 (right above the break) continues to sing whenever you play F5. I had someone play F5 while I went around and placed my finger on that section of the bridge behind F2. It only goes away when I touch the speaking length of F2. However, that damper could not be doing its job of muting F2 any better. The felt is seated perfectly and is not too long or too short, in my opinion. Clearly, it is sitting on that particular node and is quite audible once you start listening for it. I have seen this sort of problem before, but it was always so subtle that no one ever complained. In this case, even a few students have noticed it. I suppose I could voice down the treble some around the 5th octave, but they kind of like it as it is, and it is not excessively bright. Anyone have a suggestion?

— Dennis Johnson, RPT

A

From Jim Coleman Sr., RPT

I'm sure by now you have already checked to see that it was not just one string which was ringing (that case usually involves one side of the damper felt being thicker than the other side). I have seen this same problem at ASU, Tempe, AZ. If the damper is rocked back so that the back damper rests heavy on the unison keeping the front damper from resting on the string, you can have the same result. Another solution is to remove the damper, replace the action and lightly touch the strings where the damper felts would be touching. If you get the same pitch over-ring, then you need

to slightly change the position of the damper felt on the damper head. Sometimes a shorter damper felt is better than a longer one if it is off the nodal point of the partial which is over-ringing. Be very careful in re-installing the damper, so that the rocking balance is correct. On only rare occasions have I needed to add a third damper felt under the middle of the damper head.

There are a few occasions where the over-ringing was a residual of a low bass string partial. This is found less on Steinways because of the extra damper helper springs. Sometimes in these cases though, you can help by changing the offending bass dampers. I believe Dennis has overruled this problem, because he was able to stop the over-ring by touching the F2 strings and stopping the over-ring, which proves that it was indeed in that note's damping characteristics.

A

From Ken Sloane, RPT

The harmonic is very likely emanating from the part of the speaking length between the agraffe and the first felt on the damper (a wedge, probably). I have not found this to be a common problem, but it has occurred with me. Tilting the damper at the head one way or the other with your fingers will frequently solve the problem. I assume this moves the damper felt away from the node that defines one end of the harmonic.

A

From Tom McNeil, RPT

Here's something to try:

Get another appropriately-sized damper, perhaps from a piano getting rebuilt, or from a wreck, or even make up one. It should be very close to the size and weight of the problem damper. Then use this substitute damper to experiment with; set the real damper aside and leave it alone. You can then reinstall it — no worse off than before — should you run out of time, materials, ideas, etc.

Experimental ideas might include: very short damper felts, located as near the ends of the damper as possible; replace one or both trichord felts with flats (not likely, but I have seen it work); different brands of felt; steaming felts for softness (trichords can be fairly firm sometimes); one very long felt instead of two.

Continued on Page 16

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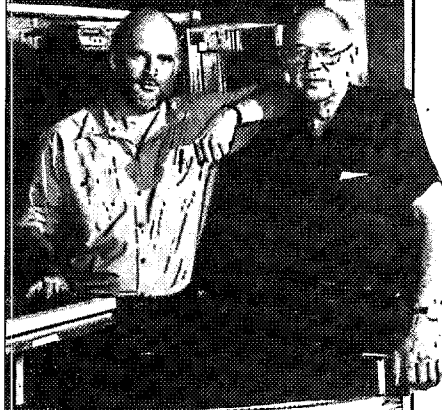
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A

From Vince Myrkalo, RPT

The only way I've ever gotten that to go away was by loading the damper head from end to end with trichord felt. It seems the longer the felt is, the better. No gaps between the pieces of felt.

A

From Newton Hunt, RPT

Take two pieces of trichord felt of the standard length. Remove the offending damper. Place the two felts in standard locations. Move pieces back and forth until the offending partial is muted. Note location and glue them on the head to conform.

Because of the height of the plate strut you can glue on dampers that will go under that brace so you can have longer felts than the block is long.

Yesterday I tuned three Ds and checked each one for that partial by playing with the head. I was unable to elicit that partial. You may have a damper piece located just enough off to hit that node.

I once had a Knabe in the shop with this type of problem throughout the bass. I used this technique to discover that the damper heads were too short. By extending the damper felt beyond the heads by 1/8" each end I was able to get superb muting. The trick there was to get them located well enough to look neat.

Q

Foreign Suppliers

I have rebuilt several German, English and French grands over the last few years, and would like to know if you could provide the names of any parts houses in Europe and England.

— David Moore

A

From Steve Brady, RPT

I'd suggest you try Fletcher & Newman in England and Renner in Germany. The addresses are:

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Letters

Continued from Page 8

and has proven to be a mecca for American musicians, from Louis Moreau Gottschalk to Dizzy Gillespie.

Beyond this, we must examine the moral side of the question regarding Cuba. People who believe in peaceful progress assume the responsibility of seeing that their neighbors who have mutual interests get the help they need. In our case this means seeing that neighbors with an interest in music and piano technology receive the proper training, based on the simple ideal that every piano out there ought to be operating at its maximum efficiency.

A visit to Cuba by any one of our members will reveal the tremendous musical and cultural development there, which has been taking place for several hundred years. The Museum of Music in Havana is highly recommended, particularly for its rare and fine musical instruments. Live music flourishes throughout the island. My experience in Cuba left me with the belief that the kind of technical assistance that the PTG can provide would be most welcome and useful. I plan to return there at the end of this year to assist in the training of piano technicians and would be most interested to know of other members of the PTG who would like to help with this most worthwhile venture.

— Frank French, RPT

Corrections

The following errors were found in Steve Fairchild's article, "The Fairchild Charts: A New Method for Plain-Wire Rescaling," in the March, 1996 issue.

On page 26, left column, fifth line from the bottom, the formula reading

$$(d \times L \times 27.5 \times \text{Hz})^{2/434}$$

should read:

$$(d \times L \times \text{Hz})^{2/434}$$

Right column, fourth line from the top, the formula reading

$$(T \times 434)^{.5/(27.5 \times 22^{((N-1)/12)})}$$

should read:

$$(T \times 434)^{.5/(27.5 \times 2^{((N-1)/12)})}$$

Another Perspective — On Humidity-Related Tuning Instability

By Darrell G. Fandrich, RPT
Seattle Chapter

In the Q&A section of the February 1996 *Journal*, "Why Do Pianos Go

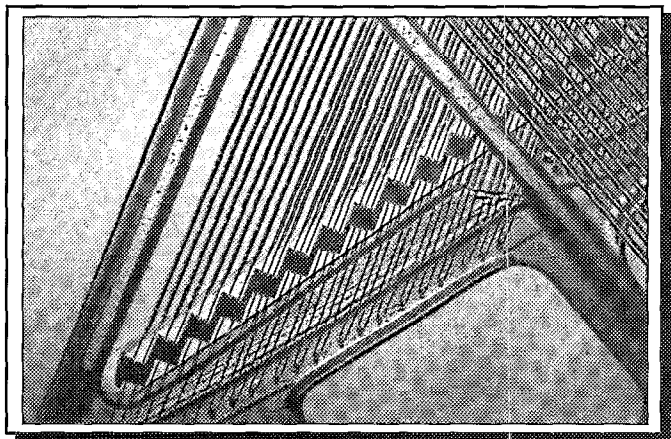


Photo 1 — Low tenor of 45" Baldwin vertical.

Out Of Tune The Way They Do?," Ken Churchill, RPT, points out that pitch is less stable at the low end of the tenor bridge than near the middle of the soundboard, which seems illogical in light of Dr. William Braid White's explanation that such instability is caused by the rise and fall of the soundboard due to humidity fluctuations. If pitch follows the rise and fall of a soundboard reacting to humidity variations, shouldn't the area of greatest instability be the *middle* where movement is greatest?

Yet — however illogical — the low tenor is most often the area of greatest instability, often not standing in tune with the rest of the piano for more than the few days or weeks until the first minor change in weather.

This past winter, three pianos in our store have provided an ongoing demonstration of this low-tenor instability: a two-year-old 45" Baldwin (See Photo 1) with 28 bass notes and four wound strings in the low tenor, a 48" Wilh. Steinberg (See Photo 2) made in Germany, with a currently fashionable 32-note bass and no tenor wound strings, and a 46" Fandrich &

Sons (See Photo 3) with a Chinese-made strung back, 30 bass notes and 2 wound tenor bichords (See Note 1).

While the *pattern* of instability is similar for each piano, the *amount* of drift in pitch varies considerably. A few days after a humidity shift of 10 to 15 percent, the tuning of all three pianos will slip enough to lose that clear, focused beauty of a recent tuning. But playing the Steinberg will be strangely confusing, for the pitch of the bottom tenor octave will have drifted away from the

humidity control system as it cannot take humidity variations of more than plus or minus 10 percent and still sound in tune with itself. The pitch of the Baldwin's low tenor also drifts, but less than half as much as the Steinberg. The Fandrich & Sons is slightly more stable than the Baldwin in the low tenor, but less stable in the treble. These patterns of instability are quite familiar and common for the Steinberg and Fandrich & Sons, and an improvement for the Baldwin over my experience with this piano; recent scale design changes seem to have helped.

Before pointing a finger at suspected scale-design gremlins, it should be noted that the slight movements of the bridge/soundboard assembly relative to the string plane that cause tuning instability are significant *not as speaking length changes but as changes in string elongation*, i.e., changes in the amount a string is stretched between slack and up to pitch (See Note 2). When the pitch of a string is altered, either by a tuning adjustment or by a humidity-induced bridge/soundboard movement, the pitch change is in ratio as the square root of the elongation change (See Note 3 and 4).

Therefore, a significant factor in tuning stability is the amount of string elongation, for *more string elongation means more tuning*

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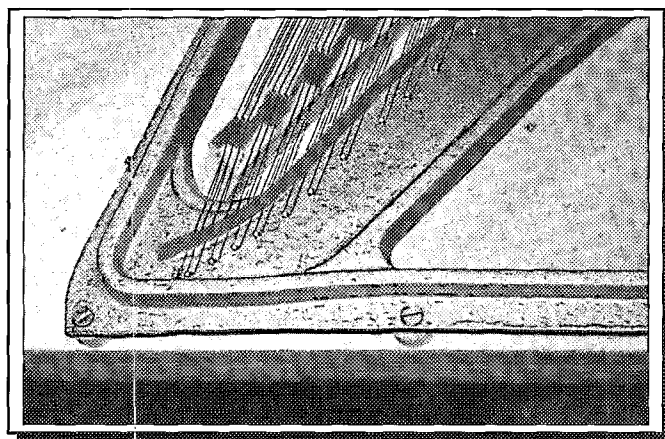


Photo 2 — Low tenor of 48" Wilh. Steinberg vertical.

overall pitch by five to eight cents at F33 *yet will have good sounding unisons*. After a 25 to 35 percent humidity shift, the overall pitch will drift five to 10 cents, the low tenor octave will drift 15 to 20 cents and most unisons will slip. We routinely equip the Steinberg, an otherwise very fine piano, with a

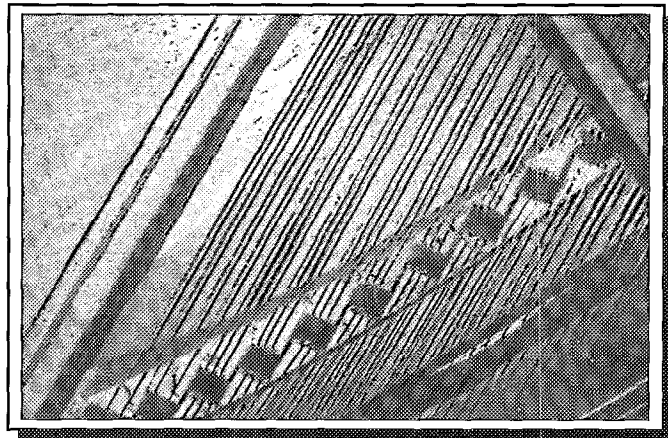


Photo 3 — Low tenor of 46" Fandrich & Sons vertical.

Another Perspective — On Humidity-Related Tuning Instability

Continued from Previous Page

stability as it will take more movement to put a string a given amount out of tune. Longer plain wire string scales generally have better tuning stability because of their greater elongation,

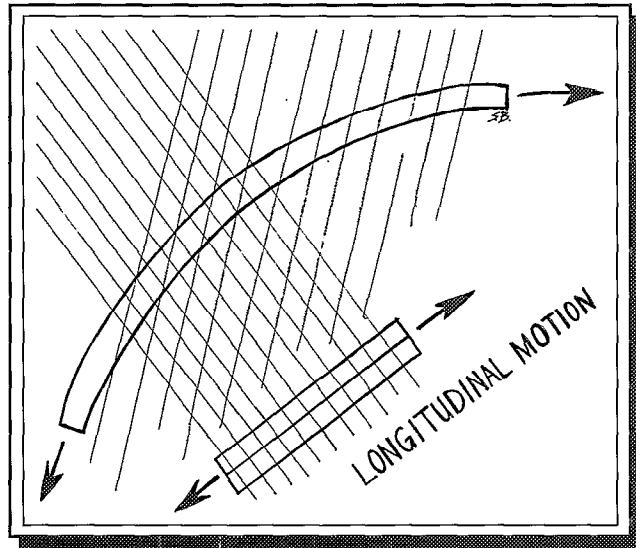


Figure 1

(parallel to the grain) expansion and contraction of the bridge and soundboard relative to the plate and string plane (See Figure 1). A distinction is made here between wood that is unrestrained, i.e., free to expand and contract in reaction to humidity variations, and wood that is restrained by a structure such as a soundboard-rib-back assembly where potential unrestrained longitudinal expansion and contraction is more a measure of internal stress contained by the structure than of actual movement. But when a structure such as a rim or back assembly is not sufficiently rigid relative to the plate and string plane, there can be longitudinal movement significantly affecting

tuning stability.

There is also longitudinal expansion and contraction of the bridges, restrained on one side by being glued to a soundboard but only somewhat as the soundboard is also affected by longitudinal expansion and contraction. The middle should not be affected by such movement because it is the center away from which the bridge expands and contracts. Nor should the high treble be affected where the strings are essentially perpendicular to the bridge. In the low treble the strings make a small angle with the bridge and, up to the point where the tension differential rises sufficiently to slip the unisons, stability may benefit from the small vector of longitudinal movement in counterpoise to the effect of perpendicular movement (See Figure 2). In the low tenor, however, the curve of the bridge closely approaches being in line with

the strings, so a major portion of any change in length parallel to the grain will significantly affect string length. A key factor is the acute angle the strings make with the bridge, since this angle determines the vector portion of longitudinal movement affecting string length.

Longitudinal expansion and contraction affects the piano at all times just as the more familiar radial and tangential forms, but it is usually ignored because it is so slight (See Note 5). However, the change in length that puts a string out of tune is also very slight (See Note 6). The question is whether longitudinal expansion/contraction is a large enough factor to be a significant cause of tuning instability. Specifically, would a humidity shift such as the 35 percent example of Note 5 produce a significant change in length? As calculated in Note 6, a range of potential unrestrained length change of from .007" to .020", depending on the wood, seems very significant compared to the .004" length change calculated in Note 7 that puts the F33 of the Steinberg 20 cents out of tune.

In comparing the three pianos, soundboard restraint in the low tenor seems fairly equal. That the low tenor of the Fandrich & Sons is more stable than the Baldwin seems due to its slightly larger size that allows for slightly longer low tenor strings and tails, and to a somewhat larger string-to-bridge acute angle in the low tenor. The better mid-tenor and treble stability of the Baldwin seems due to a

which is disproportionately greater than short scales because elongation is a function of the third power of the string length. The disproportionate loss of elongation when string lengths are foreshortened from an exponential progression, such as is common in the low tenor, exacerbates the problem of instability.

Another factor is the length of string tails, which are often foreshortened in the low tenor to allow for a slightly longer speaking length. Shorter tails are less stable because the amount of pitch change urged by a given amount of rise or fall of the bridge-soundboard is inversely proportional to the tail length, i.e., a doubling of tail length would roughly halve the change of pitch urged by such movement.

Also a factor is soundboard restraint. In a well-reasoned response to Ken Churchill's question, Del Fandrich points out that this low tenor area of the soundboard is usually less restrained — it is out from under the influence of the bass bridge, the end of the bridge beam is more flexible, ribs are usually smaller and string tensions are usually lower. With less restraint, soundboard movement in reaction to humidity variations will be greater, causing correspondingly greater changes in pitch.

Still another factor is longitudinal

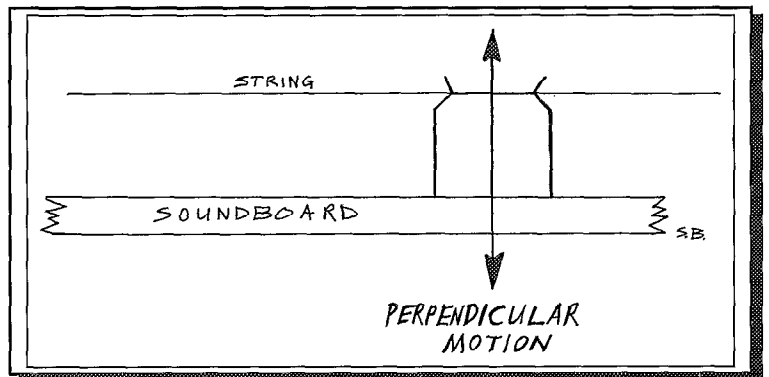


Figure 2

longer, higher tension string scale with a considerable elongation advantage. While the tenor scales of both the Baldwin and Fandrich & Sons are foreshortened to the extent of needing

wound strings, the Steinberg has a tenor scale derived of an exponential progression and should be the most stable of the three. It has the longest low tenor scale with low inharmonicity, high tension, generous elongation — all the right stuff, presumably, so why is its low tenor by far the most unstable?

A clue to the low-tenor instability of the Steinberg is the way it goes out of tune — that five- to eight-cent drift in the low tenor *before* unisons start to slip. Why? In theory, bridge/soundboard movement perpendicular to the string plane affects the tension of the string tails inversely as the tail lengths are in proportion with the speaking lengths, which means that a tension differential is formed between the speaking and tail lengths urging bridge roll and soundboard distortion. When this tension differential exceeds the holding ability of the bridge pins, the strings slip through to equalize tension. But the strings never slip at exactly the same times nor in precisely equal amounts, so unison tuning slips. Just how far the pitch will drift in the low tenor before the strings slip through the bridge pins will be significantly affected by any longitudinal movement of the bridge-soundboard relative to the plate, because a major difference between perpendicular and longitudinal bridge movement in the low tenor is that perpendicular movement raising pitch *raises* tail tension whereas longitudinal movement raising pitch lowers tail tension, and vice versa. Such complimentary longitudinal and perpendicular movement will allow additional low-tenor pitch drift *before* the tension differential is sufficient to force the strings to slip through the

grip of the bridge pins (See Note 8). This pitch behavior suggests a plate design and/or a soundboard-back-rim assembly connection that allows relatively unfettered longitudinal bridge movement.

There are only two screws (#18 x 4") holding the plate to the soundboard/back assembly of the Steinberg near the low tenor end of the tenor-treble bridge. Also, the bottom plate screws are fitted with wooden sleeves to support the plate about one inch off the soundboard — not as rigid as the Baldwin and F&S, each of which features more screws and a plate bearing directly against a liner glued along the edge of the

soundboard.

Perhaps a more rigid connection between plate and soundboard/back assembly would better restrain longitudinal motion for improved low-tenor pitch stability. The sequence of photos number four to number eight shows two of the wooden support sleeves in the low tenor area of the Steinberg's plate being replaced by a hardwood liner (1" x 1" x 14") fastened with the two original #18 x 4" screws and six lag bolts (3/8" x 5"), which proved to be a bit more than adequate.

The piano was tuned immediately after modification with the relative humidity 24 percent and rising. After a

Continued on Next Page

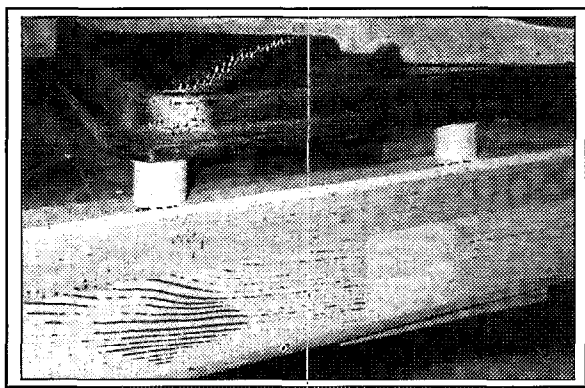


Photo 4 — Steinberg vertical showing original plate-support dowels at lower bass end.

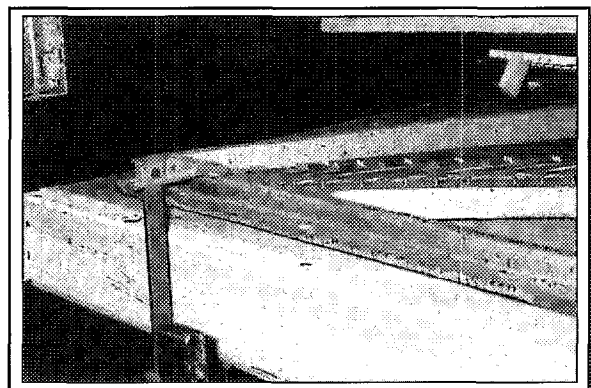


Photo 5 — Steinberg vertical with clamp holding plate to back, with two plate screws removed.

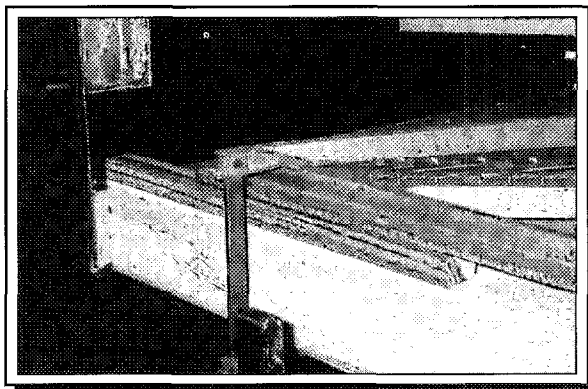


Photo 6 — Steinberg vertical with new hardwood liner inserted between plate and back.

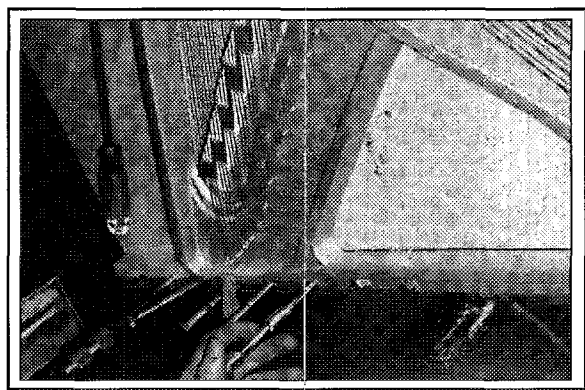


Photo 7 — Steinberg vertical with additional plate lags being installed.

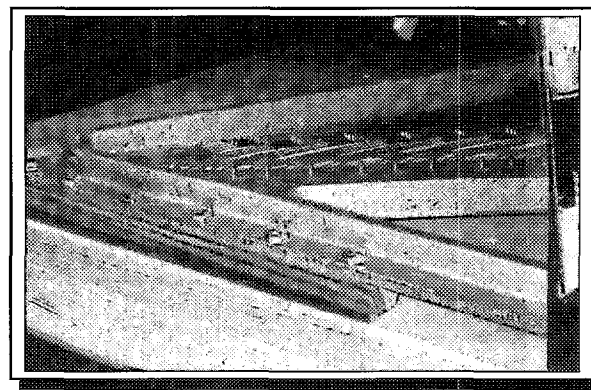


Photo 8 — Steinberg vertical, modification completed.

Another Perspective — On Humidity-Related Tuning Instability

Continued from Previous Page

week of humidity in the mid 40 percent range, there was only a slight rise in pitch of the bottom tenor F33 compared to the 10 to 15 cent drift normal for this piano after a 15 to 20 percent change in humidity. The following week, warmer weather brought humidity in the high 50 percent range and the tuning slipped noticeably, bass to treble including unisons. When the piano was retuned, the low tenor F33 was found to have drifted about eight cents sharp while *F45 to C52 in the middle of the soundboard had drifted 10 to 12 cents sharp*. Another tuning six weeks later confirmed that for a relatively new piano the tenor/treble is now quite stable, with a low tenor that is actually slightly more stable than the mid- and upper tenor.

The upper bass of the Steinberg is now the area of greatest tuning instability. During recent transportation, the piano was exposed for about 30 hours to humidity in the low 70 percent range, up from the 30 percent range in our store. Checking the pitch after unloading, the tenor averaged one to two cents sharp, but many upper-bass unisons had slipped and E32 was seven cents *flat*, tapering back on-pitch about an octave lower. This instability was traced to a combination of factors: 1) low upper-bass elongation, 2) a relatively small amount of soundboard rise due to the upper end of the bass bridge being close to the bass cut-off bar, 3) an upper-bass strings-to-bridge acute angle of 72 degrees that directs about 30 percent of longitudinal movement toward string length change, and 4) a bass bridge located on soundboard grain that is in line with the recently reinforced low tenor, which now seems to be the point away from which the bass bridge and soundboard expand rather than the previous point near the middle of the bass bridge. Because the upper end of the bass bridge is about eight inches from its middle but 22 1/2 inches from the recently reinforced low tenor, the potential longitudinal motion affecting E32 has almost tripled as a result of the low-tenor modification. A second modification is planned that will reinforce the connection between the plate and the upper end of the bass cut-off bar so that longitudinal movement will be blocked equally at both ends of soundboard grain in line with the bass bridge, returning the central point of

expansion-contraction to the middle of the bass bridge.

In conclusion, low-tenor pitch instability relative to overall tenor/treble pitch level is primarily a result of *combined and complementary effects of perpendicular and longitudinal bridge-soundboard movement relative to the plate*. The amount of low-tenor pitch drift is determined by 1) the *rigidity* of the plate to soundboard/back assembly connection, 2) the amount of *string elongation*, 3) the length of the string tails, 4) the *acute angle* between the low tenor strings and bridge, and 5) the level of *soundboard restraint*.

Pianos with good low-tenor pitch stability have a number of design features in common, some of which are: 1) A *rigid connection between the plate and the edge of the soundboard-rim-back assembly* that extends at least a few inches to either side of soundboard grain passing through the end of the tenor bridge. 2) A *moderately and gradually foreshortened tenor string scale with a back-curved (S-shaped) bridge* that balances the loss of string elongation with an increased string-to-bridge acute angle — which incidentally also provides a smoother transition of inharmonicity from tenor to bass (for tunability) and of string flexibility (for even tone quality) than does a pure exponential progression (but that's a subject for another article). 3) *Adequate and proportionate tail lengths*. 4) *Placement of the end of the tenor bridge in the highly restrained area near the bass-side bottom corner of the soundboard* — which, incidentally, also minimizes the effect on tone of bridge beam termination. This placement is made possible by a moderately foreshortened low-tenor scale as more notes can be placed in the tenor rather than bass section.

The factors that cause the pitch of piano strings to drift about on the tail of ongoing humidity fluctuations form a complex impossible to calculate precisely, with many unknowns, variables and assumptions begging for computer modeling and the precise measurement now possible with small lasers. Nevertheless, the presented calculations should give a reasonably good overall view of the effect of longitudinal bridge/soundboard movement on tuning instability.

To design a new piano with remarkable tuning stability may now be possible, but it is utterly impractical to improve by redesign and modification existing pianos with tuning stability problems, *and most all pianos have a serious tuning stability problem if in-tune sound is desired on a day-to-day basis*. Fortunately, the sword to cut this Gordian knot of instability is easily available and affordable: to improve tuning stability to a level of day-to-day in-tune sound, be certain all plate bolts are tight, particularly in the low tenor area, and *install a humidity control system*. Even a partial system, rod and switch, *will dramatically improve tuning stability on a day-to-day basis*. If low-tenor instability persists after a year of humidity control, consider improving the rigidity of the plate connection in the low tenor area. Usually sufficient is simply to fit and install slightly longer plate bolts, lag bolts or screws being preferable to through bolts because they stay tight better. Also, swabbing the holes generously with varnish before bolt installation will help to increase rigidity. If additional bolts are required, be careful to shim any gap between the plate and soundboard or liner so as not to stress the plate.

“Yet — however illogical — the low tenor is most often the area of greatest instability, often not standing in tune with the rest of the piano for more than the few days or weeks until the first minor change in weather.”

Notes

Note 1. Bottom tenor strings: Comparison data and calculations.

	Br.	Cosine	Br.L	Tails	to side	to bottom	last rib
F&S #31	35"	.819	55"	4-5 1/2"	5"	5"	16"
Steinberg #33	20"	.940	53 1/2"	3 1/2-5"	10"	4"	17 1/2"
Baldwin #29	30"	.866	53"	3-4 1/2"	8 1/2"	4 1/2"	17"

	L	d	D	T	%bp	l(coif.)	E	at F33
F&S #31	35.6"	.037"	.054"	187	54	.13	.209	.127
Steinberg #33	37.4"	.040"	—	157	40	.15	—	.162
Baldwin #29	36.3"	.047	.069"	261	51	.47	.184	.101

Note 2. The formula to calculate elongation is based on Hooke's law (strain is proportional to stress within the elastic limit), and is derived from Young's modulus of elasticity (the ratio of an increment of force to the increment of deformation produced within the elastic limit). Young's modulus for piano wire is about 29 million psi, which is a ratio: unit stress unit deformation:

$$29,000,000 \text{ psi} = T L / A E$$

where T is tension, L is length, A is cross sectional area ($r^2/4$, or $d^2/4$, where d is string or core diameter), and E is elongation. Solving for E:

$$E = T L / (d^2/4) 29,000,000$$

which simplifies to:

$$E = 4.3 \times 10^{-7} TL/d \text{ (.043 if d is in mils)}$$

where d is the string (or wound string core) diameter.

Note 3. To illustrate the relationship of elongation to pitch and string lengths, an unwrapped string tension formula is substituted for the tension, T, in the elongation equation of Note 1.

$$E = .0000043 L (.0023 d^2 F^2 L^2) / d^2$$

which simplifies to:

$$E = 9.89 \times 10^{-10} F^2 L^2$$

Note that for unwrapped strings, elongation is *independent* of wire size and proportional to the *third power* of the length, which means that a change in wire diameter will affect tension and other factors *but not elongation*. It also means that the effect of foreshortened string lengths such as in the low tenor *reduces elongation more than tension*, which is proportional to the square of the length.

Note 4. Some useful calculator formulas for Cents and Hz. calculations:

1) To calculate Hz.: $12^{2(N-1)} \times 27.5$, where N is the note number.

3) To calculate Hz. from cents: $1200^{2(\# \text{CENTS})} \times \text{Hz.}$

2) To calculate Hz. plus or minus cents: divide cents by 100 and add to or subtract from N in Eq.1 above, e.g., (N1+.2) for note, N, at 20 cents sharp.

4) To calculate cents difference between two frequencies, **Hz.1 and Hz.2: $\log(\text{Hz.1}) - \log(\text{Hz.2}) \log^{1200} 2$**

Note 5. According to Marks' Standard Handbook For Mechanical Engineers, longitudinal shrinkage of wood from green to oven-dry is from 0.1 percent to 0.3 percent of its length, depending on the wood, and is usually ignored as it is only 1/20 to 1/40 the amount of radial or tangential shrinkage. However, longitudinal expansion-contraction in restraint can generate considerably greater force than radial or tangential forms due to the greater strength of wood parallel to the grain,

e.g., 15 to 17 times greater for Sitka spruce. Shrinkage from green to oven-dry is generally considered to be a *linear* process of which about *half* has occurred when dried to a 12 percent moisture content, which corresponds with the equilibrium moisture content of wood at 70 degrees and 65 percent relative humidity. A drop in relative humidity to 30 percent at this same 70 degrees temperature would reduce the EMC to about 6 percent, one quarter of the green wood MC. It follows that about one quarter of the total shrinkage from green to oven-dry will occur between a 12 percent and 6 percent MC, which corresponds with a .025 percent to .075 percent range of potential unrestrained change in length, longitudinal or parallel to the grain.


Note 6. Using the equations of Notes 1, 2 and 3: the Steinberg's F33 is 37.4" long and strung with 17 1/2 gauge wire (.040"), which is elongated by .162" at standard pitch. At 20 cents sharp, about two beats, the elongation is .166", for a difference of .004".

Note 7. The tenor-treble bridge of the Steinberg is about 53.5" long. For a 35 percent variation in relative humidity, the unrestrained movement at the end of the bridge expanding along the grain away from its middle would be between .007" and .020" for shrinkage factors of 0.1 percent to 0.3 percent respectively (.00025 x 26.75" and .00075 x 26.75"). For the Steinberg with an acute angle of about 20 degrees between the strings of F33 and the bridge, the vector part of this movement acting to lengthen the strings is about 94 percent. For the 35 degree angle of the Fandrich & Sons, about 82 percent.

Note 8. A middle between two extremes:

1) If it is assumed that bridge/soundboard movement is longitudinal, with no perpendicular component, and that the strings do not slip through the bridge pins, longitudinal bridge movement for 20 cents sharp would be the .004" of Note 6, with tail tension at about 121 pounds and speaking length tension at about 161 pounds for a tension differential of about 40 pounds. If the strings slip all the way through the bridge pins to completely equalize the tension differential, the strings will drop back to on-pitch.

2) If it is assumed that bridge/soundboard movement is perpendicular to the strings, with no longitudinal movement, and that the strings do not slip through the bridge pins, bridge rise for 20 cents sharp will be slightly over one half inch, with tail tension at about 427 pounds, 109 percent of breaking strength, and speaking length tension at about 161 pounds, for a tension differential of about 266 pounds. But the bridge obviously does not rise half of an inch. Nor do string tails break with a 20 cent rise in pitch, but slip through the grip of the bridge pins at a tension differential of far less than 266 pounds.

3) The .004" of longitudinal movement of 1) above is also the amount of movement that would keep tail and speaking length tensions equal in 2) above, but at a bridge rise of only 5/32". This illustrates the potential of complementary perpendicular and longitudinal bridge/soundboard movement to allow significant drift in pitch without upsetting unison tuning. 

Touch-up Tuning

Chris A. Trivelas RPT
Contributing Editor

Our Real World and Welcome to It

In a perfect world, we would have unlimited time and budget to make the pianos we work on the best they could be. In a less than perfect world, we expect these conditions to prevail at least for concert preparation. In the real world, we sometimes have adequate time and budget to prepare for concerts, but often we do not. It is natural, and has become tradition, that the performer wants the freshest tuning he or she can get. This means that if anything goes wrong in the previous stages of concert preparation, the time left for tuning can be cut short. Delivery of the piano can be late, other musicians must set up, tune up, and warm up, sound checks must be done, the pitch of the piano (especially the tenor) can change when the heating or air conditioning is turned on, or when outside stage doors are opened to allow load-in of equipment. Stage lighting can melt a tuning, especially if the lid of the piano is removed. A million things can go wrong, and often do. Sometimes the piano technician has enough weight to throw around to make sure adequate time is left for tuning. Sometimes not.

A quick analogy: touring pianists must be able to adapt to the instruments on hand. Better musicians can draw more music from marginal pianos. But even for them, a point is reached where less damage is done to their reputation by refusing to play a bad instrument than by letting it make them sound unprofessional in performance. Similarly, piano technicians must adapt to circumstances to the extent that is consistent with preserving their reputation.

What exactly can the technician do when there is not enough time to do a full tuning? It is worthwhile to talk about this problem for the sake of those who do

concert preparation. But much of this discussion will also transfer to non-concert situations. This aspect will be expanded upon in a future article. What follows is a suggested procedure compiled from conversations with several technicians having extensive concert experience.

Thinking Fast

First, the technician must make an assessment of the condition of the piano, the time available to work on it, and a realistic estimate of how much improvement is possible under the circumstances. Under more normal conditions, this assessment of the condition of the instrument is the phase which should be done most slowly and carefully. When time is short, a quick chromatic scale will have to suffice to find out-of-tune unisons, and notes which need voicing or repair. Depressing hands-full of keys with the damper pedal down will reveal sluggish keys, a few more chromatic double octaves (and/or octaves plus fifths) across the break will show if the tenor has gone sharp or flat, and pedal function can be checked at the same time. If necessary, all this can be done in less than a minute.

It is not a good idea to change pitch under the circumstances we are considering. The main reason, of course, is lack of time. But even if the possibility of squeezing in a pitch change exists, it will almost certainly leave the piano less stable. We should never have to make this choice, but if we are forced into it, a stable concert tuning that is slightly off pitch is better than a tuning which is on pitch but unstable.

Working Fast

Now it's time to get to work. Whatever would detract most from the performance should be addressed first. If we assume acceptable mechanical function and go directly to the tuning, this means unisons first, especially in the melodic range. When doing the chromatic scale (above), out-of-tune unisons should have stuck out and been remembered. Any really obnoxious unisons should be brought in first, then the worst ones in the melodic range. Stability is a very important issue, and the unisons which were out were also the least stable. These need special attention with the technician's best techniques for stability. If they are not very far out, and time is short, the technician can assume the middle string is in tune and tune the outside strings to it. If this assumption is wrong, it is still a net improvement to the tuning, and there may be time to check the octaves later. If the unisons are farther out, the octave needs to be checked to make sure the middle string isn't the one that moved. Also, unisons adjacent to plate struts are less stable and should automatically be checked with their octaves. Midrange and tenor unisons are next. Bass unisons, if they are out, are very noticeable to the performer and audience, but fortunately they are relatively stable and don't go out often. After that, the tenor should be brought back to pitch if it has moved. Strip mute only if sufficient time is guaranteed to bring in all the unisons. Strip muting is more efficient in the long run, but it may be necessary to be able to walk away from the piano at a moment's notice. High treble unisons can then be brought in. Finally, if there is any time left, octave and double octave tests can be done to find any strays.

The procedure described above should not be called or considered a tuning. At best it is a reassembly of the previous tuning. If the general shape of the previous tuning is still there, any stray notes in the last step described above will fall back into place, improving all the intervals involved. You may not know when or by whom the

“Similarly, piano technicians must adapt to circumstances to the extent that is consistent with preserving their reputation.”

“Should the weak links be eliminated by making as fine an adjustment as possible, or should they only be brought up to the level of no longer being the weakest link?”


previous tuning was done, or you may be touching up a tuning that you did only a few hours before. In this last case, a quick touch-up may actually provide the benefit of a more stable tuning for the concert itself.

Also, the above procedure is only a suggestion. It should be modified to fit the particular circumstances. Some technicians take the time to check octaves as they tune unisons, or use a slightly different order based on their assessment of what would most affect the performance. The more the technician knows about the performer and the program, the better. Although it goes against our grain, in a pinch we can ignore notes which are not going to be used. But we can't forget about the notes to be used in the encore!

This business of addressing the weakest link first can be trickier than it seems at first. For example, I spend a lot of time in my regular tunings on the high treble unisons, and like most of us, I am sensitized to hear them when they are only a little out of tune. It can take quite an effort of will to leave them till last (or almost last) under time-pressure concert conditions. The technician must be able to set aside his or her own pet peeves and approach the situation from the point of view of the audience and the performer.

Another way to think of the situation is that the performance piano projects

an "image" to the audience. The concert technician who is under time pressure, and perhaps even unfamiliar with the instrument, must quickly connect with that image, determine its weaknesses, and make many decisions about how to improve it. Should the weak links be eliminated by making as fine an adjustment as possible, or should they only be brought up to the level of no longer being the weakest link? If the latter, more time might be available to eliminate the next weakest links. Is it necessary to proceed in a manner which allows for the possibility of having to leave the piano at a moment's notice? If so, this precludes strip muting. If a high treble unison is out of tune, will the audience notice? If not, will the performer notice and be distracted? Or will no one notice but the technician? This is not to forget that many subliminal factors go into the "image" that the piano projects, factors that the audi-

ence would never notice. In a perfect world we would have time to tend to all of them. In the real world, we always face limits. When we have done what we can to expand them, we do the best we can within them. It is perhaps a curse of our profession that when we do it well, the piano fades into the background not to be noticed at all, leaving in the foreground only the music. 

We should never have to make this choice, but if we are forced into it, a stable concert tuning that is slightly off pitch is better than a tuning which is on pitch but unstable.

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Down To The Wire

By Ray Chandler, RPT
Director of Concert Services,
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Steel wire has about 150,000 known uses and is made to about 10,000 different specifications of hardness and ductility. Nails, springs, and even tuning pins are actually steel wire. Steel wire ranges in diameter from one-thousandth of an inch to as much as three-quarters of an inch.

Piano wire manufacturing is the “aristocrat” of steel wire-making. Rigid and demanding specifications in terms of both diameter and composition make this industry a very specialized one indeed. Each piano wire size must be diametrically precise, uniform and consistent — to at least a 0.0003 inch tolerance. Additionally, the wire must be made of steel with specific alloy composition: relatively high carbon content for sufficient tensile strength, yet not so high as to jeopardize *elasticity* — stiffness and resilience.

Piano wire can be thought of as individual springs. Strings are springs! The applied force of the hammer creates *stress* in the wire which results in a deformation called *strain*. Strain is the elongation of the wire, stress is the tension.

The molecular structure of the steel determines the degree of stress and strain. The density of molecules in steel depends on a balance between the molecular forces of attraction and repulsion so that when the hammer strikes the string, the molecular distances are changed and the wire becomes temporarily deformed. This shift in molecular spacing causes stress. The amount of stress is usually equal and opposite to the amount of applied force. When the force is removed, the molecules return to their balanced positions and the wire, because of its elasticity, returns to its original shape. If the applied force separates the molecules to the extent they are unable to return to their original positions, the material becomes permanently deformed. When piano wire is stretched to the point of deformation it is said to have reached its *elastic limit* — about 70 percent of tensile strength.

Stress is always proportional to strain as long as the tension on the wire is below its elastic limit. This is an axiom in physics that is commonly referred to as *Hooke's Law*, discovered by seventeenth century British physicist Robert Hooke. When wire is stretched above its elastic limit, stress and strain are no longer proportional and the wire permanently deforms.

The various types of stress-strain deformation are referred to as *elastic moduli*. An example is Young's modulus of elasticity which expresses strain as elongation due to stress in relation to original length. Expressed as a formula,

$$YM = \frac{\text{force/area}}{\text{elongation/length}} = \frac{F/A}{E/L} = \frac{FL}{AE}$$

The actual value of Young's modulus for piano wire is about 2×10^7 pounds per square inch.

Piano strings under continuous tension over a period of time tend to slightly elongate. A slow creep causes the wire to lengthen to the extent that after tension is released, it does not return to its exact original length. Higher carbon content would increase the tensile strength and reduce creep, but at the same time would increase the wire's brittleness and the risk of the wire rupturing when tensioned or swaged.

High-carbon steel, by definition, has a minimum carbon

content of 0.6 percent. Piano wire has a carbon content of between 0.85 percent and 0.95 percent and is low in residual manganese, sulfur and phosphorus. Piano wire makers have rigid guidelines and specifications to ensure that the steel used in production will have the ideal carbon content — high enough for sufficient tensile strength to ensure a bright enough timbre, greater tuning stability and minimal creep — yet not so high that the wire loses its elastic quality.

Steel wire can oxidize over a period of time, and the question is sometimes asked why piano strings are not made of stainless steel. The answer is simple: the tensile strength of stainless steel is too low for piano wire. Some, if not all, piano wire factories apply a nickel-cadmium plating in the final draft so the wire can retain a more polished look.

Steel Replaces Iron

Forged iron music wire was used in musical instruments of 14th century Europe. Germany and England were the principal suppliers of piano wire during the 18th and into the 19th centuries, and it is difficult to establish exactly when the wire makers began using steel instead of iron, in part because some historians did not know the difference between steel and iron and the two terms were often used interchangeably. Two 1840 patents contain formulae for tempering steel piano wire. Since wrought iron cannot be tempered, it is safe to conclude that the patentees really were referring to steel.

Steel, having a higher carbon content than iron and therefore higher tensile strength, became the choice for piano wire makers by at least the mid-19th century. The first major producer of steel music wire was the English firm of Webster & Horsfall, who dominated the piano wire market for the first half of the 19th century. Interestingly, Beethoven (1770-1827) and Liszt (1811-86) both had a reputation for breaking strings. Beethoven played on iron strings, Liszt played on steel. So there you have it folks ... string breakage is not a 20th century phenomenon, nor did it end when steel strings replaced iron strings. As an aside: Liszt was a keyboard Titan and often requested a second piano in reserve during his performances. Arthur Friedheim, in his book *Life and Liszt*, quotes German poet and music critic Heinrich Heine's 1844 impression of Liszt: “He is here, the Attila, the scourge of God, for all Erard's pianos, which trembled at the news of his coming and now writhe, bleed and wail under his hands.”

Steel strings were much stronger than iron and were the ideal means for higher tensioned scales, resulting in pianos with greater projection and improved sonority.

Other notable 18th century wire makers who significantly contributed to the development of piano wire were Martin Miller of Vienna, Nuremberg's Moritz Poehmann, and the Massachusetts firm of Washburn & Moen, which by the end of the century was known as American Steel & Wire Company. Piano wire manufacturers of the period actively competed against each other to make the finest wire, each one employing its own unique recipe for producing piano wire with the most



strength, highest and longest lasting polish, and most uniform diameters. Invariably, Mr. Poehlmann's wire proved superior, as demonstrated at World Expositions of the last half of the century.

There are three major piano wire suppliers in the world today: Mapes (USA), Roslau (Germany), and Suzuki (Japan). All three companies manufacture wire in metric (Westphalian) gauges, but only Mapes draws wire in both metric and American gauges. A comparison of the two different measuring systems can be found in Table 1. Notice that the American gauges are larger than the corresponding metric gauge numbers through 22 1/2 gauge, and although the difference is never greater than 0.017 mm (0.0007 inches) and the manufacturers hold to very strict production tolerances, it is entirely possible that, because of the albeit small margin of manufacturing tolerance, a #17 metric, #16 1/2 AS&W, and #17 AS&W wire could all three have the same exact diameters! A good rule of thumb, therefore, when restringing or replacing defective/broken wire is to use American-gauge wire in U.S. built pianos and metric-gauge wire in European and Asian built pianos. Most, if not all, pianos built outside North America are scaled and manufactured using metric gauges.

Cold-Drawing

The knights of the crusades wore chain mails that were fashioned of drawn wire and there is sufficient evidence, in fact, to suggest that wire drawing began as early as 800 AD. Early wire-drawing dies consisted of holes in steel plates which quickly wore out and could only accommodate softer metal. Moreover, the wire was always inconsistent in diameter and tonally left much to be desired. By 1820 the steel dies were rapidly being displaced by ruby and diamond dies, greatly improving accuracy and manufacturing efficiency.

Piano wire is made from steel rods which the wire makers receive from select steel mills, where the alloy composition is known to meet the requisite and sophisticated criteria for making piano wire. The rods — usually about one-quarter to five-sixteenths of an inch in diameter — are heat-treated in a patenting furnace then wound onto "haul-off" frames and moved to the die line, where the wire's diameter is reduced by as many as 20 drawings through successively smaller dies (sort of like pulling an oversized shoelace through a shoe's hole). Piano wire, unlike ductile steel wire, can only be drawn to reduction in several steps or "passes." The wire tends to heat up during the drawing; it also becomes narrower, longer and *harder*. When the wire becomes work-hardened from the friction of the drawing, it also becomes

more brittle, so an annealing process between passes helps restore the wire's malleability and brighter surface. A soap lubricant is applied to lower friction, energy consumption and the risk of fracture.

The specialized tungsten-carbide dies have a tapered hole through which the wire is drawn, causing a permanent diametrical reduction (See Figure 1). The die (hole) must be both smaller and harder than the steel rod which will be pulled through it. The exit end of the conical or tapered hole must be exactly sized for the desired diameter. The wire is first pointed, to enable insertion, then gripped by tongs that pull a short section of wire through the die for

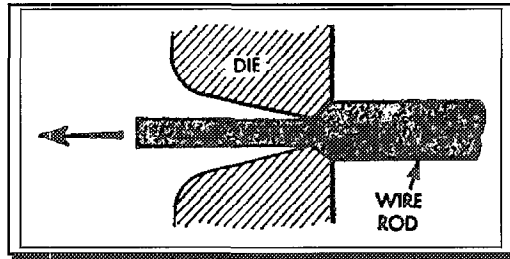


Figure 1

inspection. If the form and dimensions are satisfactory the tongs are removed and the wire is secured to a rotating drum or "block" by a small vice on the block's upper edge. The wire must be *cold-drawn* to assure accuracy, superior strength and physical properties, as well as a smooth, bright finish.

The final draft includes a nickel-cadmium plating process, where the wire is plated prior to being pulled through the die. The plating, although slowing the draw speed down (to about 150 feet per minute), gives the wire a more polished look (See Photo 1). This is not to be confused with wire that is tin-plated for use in instruments that will be exposed to humid, tropical conditions.

Bass Strings

Bass strings are wound or "loaded" with copper wire that has been drawn in much the same way the steel was drawn, only the copper is always drawn wet. The copper wrapping is necessary to slow the strings vibration and therefore lower pitch. This works out much nicer than lengthening the piano by an extra 20 or 30 feet!

Copper has been found to be ideal because of its weight-to-malleability ratio and is used exclusively in all current bass string making. For all intents and purposes it is 100 percent pure. Other materials that have been used extensively in the past to load bass strings include iron, brass and even aluminum. There was a period of time in the 70s and early 80s during which some bass strings were loaded with iron wire that was electroplated with copper. The idea was to "beef up" the bass register of small pianos (i.e., spinets), but this practice was completely discontinued by the mid-80s.

Core wire for bass strings has a lower carbon content and therefore lower tensile strength than treble wire. It must be able to endure the swagging (flattening) process without cracking or splitting. The ends of the core wires are swaged so the copper winding ends will be held secure and tight.

Continued on Page 27

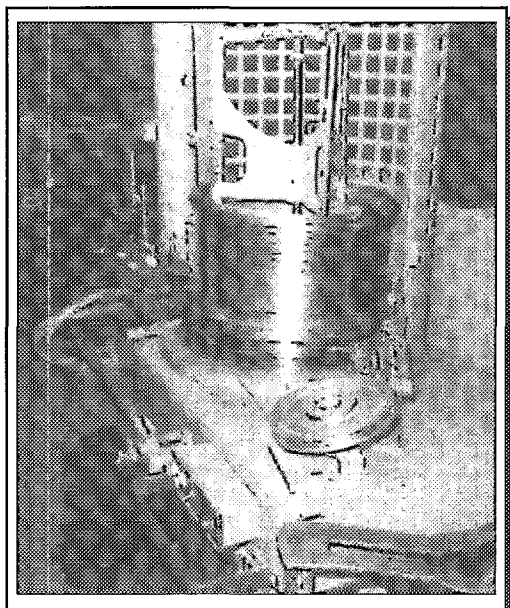


Photo 1 — Finish machine: Drawing the wire through the die and plating line. (Photo courtesy of Mapes)

Hammers & Tone

By Nick Gravagne, RPT
New Mexico Chapter

This article is the first part of a short series on piano tone and hammers, specifically New York Steinway hammers. Future articles will cover such topics as prepping and voicing these hammers, key weight and friction, customer communications, and expectations.

Do You Know What Piano Tone You Like?

Today, more than ever before, many sincere hammer makers solicit our interest and loyalty, all stating virtues and (sometimes) superiority of product. It can get confusing, eh? Most hammers today are well made. The materials are good-to-excellent, and the processes strict. It boils down to this — different hammers elicit different tones. The real question is “Do you and your customer like what you are getting from that hammer, from that instrument?”

Tone evokes different responses, and we don't all hear *quite* the same, although broadly speaking we do. I, as many of you, have witnessed one person rave about a certain tone, another decry it, and my own sense tell me something else again. As technicians, some fierce (and sometimes choking) points of view are held as to not only what tone we all want, but what hammer will give it to us. Behind the dogmatism often lies much that is well-intentioned, but missing the point. Just because I may happen to prefer a particular tone doesn't mean that Emma Schwartz will, or that you will. In the end what matters is that *you* have been true to *your* taste and to that of your customer.

I have admired many new or rebuilt pianos of many makes and models. Along with tone and overall performance, isn't there something to consider called personal taste? True, I may have admired the tone, and yes, I may have thought the sound appropriate for that instrument, and yes, I may have the greatest respect for the artist-technician that made it all happen. But no, it is not the tone I prefer, or quite the voice I would have sought for that piano. Why is that? Well, it really isn't so hard to know. We don't all dress the same, or prefer the same food, or

books, or movies. So, let me ask these questions: Do you know what *you* like? Do you have a personal sense of tone that turns you on? Do you have a good idea of what the piano manufacturer intended? Do you know what your customer wants?

Good Vibrations

The Basic Piano Tone

For the sake of the next part of this article we are going to assume that the belly of the piano is in good working order, and that the instrument is ripe to

“Where there is no ‘color change,’ but only something of a volume change, the pianist has little to work with in creating and interpreting music.”

produce fine tone. So, first things first. There are at least two components of piano tone which are objective enough to discuss in definite terms. They are: 1) dynamic range, and 2) sustain characteristics.

Sometimes we forget that the evolution of the piano, and its very name tells us something. The original and descriptive name for the instrument was *Piano-Forte*, which literally means soft-loud. In order for piano tone, then, to be piano tone it must first be characterized by a dynamic range, a range of tones that speaks differently depending on how hard or soft the pianist strikes the key. Where there is no “color change,” but only something of a volume change, the pianist has little to work with in creating and interpreting music. One might say that the “color” remains the same, although it may vary in intensity at different force levels of playing. Aside from being boring, this sort of tone is not, strictly speaking, really piano-forte tone. Hammers which are either much too

hard (dense) or much too soft produce no effective dynamic range. Somewhere in between are those hammers which would be more dynamic if only voiced properly.

Next, if no appreciable after-tone or follow up to the initial attack exists, we have less than ideal tone, one that doesn't sing, project or carry properly. Now notice that the note might *sustain* for a good while, but the *volume* of that sustain is too low, or out of balance with the louder attack component. A hard hammer produces this sort of anemic tone beginning with an explosive attack, after which the hammer immediately flies off the string causing the tone to break up into tiny tone bytes. What follows is a weak fundamental and low level of audible sustain.

On the other hand, a firm yet resilient (bouncy) hammer strokes and “pushes” the string, then rebounds allowing the fundamental to develop and dominate, carrying on its shoulders a pleasing and coloring array of upper partials. Such a tone shines and has fullness. Interestingly, a too-soft hammer at least produces a decent fundamental tone followed by a sustain/decay which balances with the attack. Lacking, however, is a strong attack followed by the full presence of overtones necessary for strength and color.

These two aspects of tone, dynamic range and soaring sustain, are basic to our overall grasp of the subject. At the very least, the hammers we choose and voicing techniques we use should conjoin in creating this basic piano tone. Other aspects of tone, such as power, overall tone color, attack, and the artistic and emotional connection made by the artist, although allowing for objective analysis, begin to embody much that is subjective, and in the realm of personal taste. Hence, those reputable hammers available to us as “aftermarket” products all possess qualities which can produce everything we need for tonal production. The question is, in what mix? Some hammers may produce tones which are fine in attack, but a bit weak in range, yet long in sustain, but not round enough. Ah! Not round enough for whom? See, given that the basics are in place, our personal, artistic, and emotional needs will drive us to choose those hammers

and techniques which will create the tone we are searching for — one that makes a pianist sit down to play, and simply not want to get up.

What Do You Think?

What about your sense of tone? Do you have one? Or are you still learning to discern? That's okay. I can remember many years ago, after I had been tuning all kinds of pianos for several years, I came across a fairly new Steinway B. I'd tuned new Steinways before. But about midway through the job I began to be drawn into the piano. Something was different here. The sounds coming out were liquid, warm, easy on my ears, and the blend of intervals and chord gatherings enchanting. I'd never heard anything quite like this, but I knew I wanted to hear it again. When finished with the tuning I played individual notes, long sonorous bass notes, firm, clear treble notes, and chords, just to *listen*. No songs to speak of, I wanted to hear this piano's voice. Since then, I have sought to evoke that sound, that character of sound, from all makes of pianos where I have the prerogative. I know what I like, and what many of my customers like. I believe this to be very important.

Once you know what you like and why, you can speak with personal knowledge and conviction to both the technical community as well as the pianists. Whether all technicians or *all* pianists agree with you isn't the point. Also, a personal sense of piano tone guides you internally when assessing the quality of any piano, or as you go about voicing pianos. And another point, knowing what works for you will stand you in good stead should you be asked to create a tone quality which is too foreign to your sensibilities. I know how tricky this can be. We've all been asked to brighten hammers to excess, or darken them to excess. We must ask ourselves how far we can stray and still maintain technical guidelines as well as personal integrity and reputation.

What the manufacturers intend is not always so easy to know. Many of their pianos out in the field are not necessarily the best examples. Some manufacturers produce what might be called a generic box. It has no real tone yet, but it will should a competent technician be called upon to make a piano out of it. Whatever, we do well to listen to pianos anywhere we can — dealer showrooms, universities, trade shows, and, of course, in our customers' homes. Listen to the various

registers of the scale, and focus first on dynamic range and sustain, then on attack and its relation to sustain, to power. And, finally, don't fail to draw on your emotions. Even though the basic tonal components may be more or less in place, do you *like* the tones, do you *love* them? I know this may seem a little much, but force yourself to judge emotionally, and don't worry if in a year your tastes change a bit. That's normal and healthy.


The Steinway Tone

What is it? And do we all even agree? How many times have you heard one person refer to that "bright Steinway tone" only to hear another refer to it as that "mellow Steinway tone?" How about "Steinway bell tones," that "big Steinway tone?" And we could go on about round tones, clear tones, deep tones, and, of course, that "brilliant and sparkling tone only Steinway possesses." Interestingly, Steinway itself refers to their piano simply as the "standard piano," which essentially is true. Sooner or later everything is compared to the Steinway.

Now, of all the accolades mentioned above, plus many more, trying to isolate one as most descriptive would be like

trying to describe a fine film solely in terms of its acting, or directing, writing, lighting, or dynamics. Such complicated creations as excellent piano tone or fine movies defy such linear thinking since so many parts make up the whole. Still, it is common to our human nature that one particular aspect of a coordinated work might strike us as unusually critical to the success of the whole, and it is that aspect which we focus on, sometimes to the exclusion of serious thought regarding any of the others. Hence, the lover of bright tones defines the Steinway as bright, the lover of mellow, the same. Whatever the prized gem, it can be found.


And there you have it! Excellent piano tone has something in it for everyone, and this is what Steinway is known for. The long and spectacular history of the Steinway piano, with its many and disparate artists and venues, has been borne along on the fact that whatever the tonal and expressive demands placed on the piano, they can be met.

Now if you are thinking of choosing Steinway hammers for your next action job, or if you are wondering what the outcome might be if you do, you'll want to check out an upcoming issue. 

Down To The Wire

Continued from Page 25

In Conclusion

The piano is the most musically expressive of all keyboard instruments and through no small contribution on the part of the individuals that helped enable bigger and better piano sound through the improvement in the quality of steel wire. Remember ... keep your mitts off that shiny copper and keep on stringin'! 

Music Wire — Foreign & Domestic Sizes

Metric Gauge	Diameter mm (in.)	Nearest AS&W Equivalent	Diameter mm (in.)
13	0.775 (.0305)	12.5	0.787 (.0300)
13.5	0.800 (.0315)	13	0.813 (.0310)
14	0.825 (.0325)	13.5	0.813 (.0320)
14.5	0.850 (.0335)	14	0.838 (.0330)
15	0.875 (.0344)	14.5	0.864 (.0340)
15.5	0.900 (.0354)	15	0.889 (.0350)
16	0.925 (.0364)	15.5	0.914 (.0360)
16.5	0.950 (.0374)	16	0.940 (.0370)
17	0.975 (.0384)	16.5	0.965 (.0380)
17.5	1.000 (.0394)	17	0.991 (.0390)
18	1.025 (.0404)	17.5	1.016 (.0400)
18.5	1.050 (.0413)	18	1.041 (.0410)
19	1.075 (.0423)	18.5	1.067 (.0420)
19.5	1.100 (.0433)	19	1.092 (.0430)
20	1.125 (.0443)	19.5	1.118 (.0440)
20.5	1.150 (.0453)	20	1.143 (.0450)
21	1.175 (.0463)	20.5	1.168 (.0460)
21.5	1.200 (.0472)	21	1.194 (.0470)
22	1.225 (.0482)	21.5	1.219 (.0480)
22.5	1.250 (.0492)	22	1.245 (.0490)
23	1.300 (.0512)	23	1.295 (.0510)
24	1.400 (.0551)	24	1.397 (.0550)
25	1.500 (.0591)	25	1.499 (.0590)

Table 1

Victorian Temperament

By Owen Jorgensen, RPT
Northern Michigan Chapter

This article is a continuation of the series published in the 1994 November and December issues of the *Journal* on pages 35 and 38, respectively. Historical temperaments outlined in these articles were the Pietro Aron meantone temperament, modified meantone temperament, and three forms of well temperament. The present article is on Victorian temperament, the variety of well temperament that was most commonly practiced during the last half of the 19th century before equal temperament became established. Of all the historical temperaments, Victorian temperament is the most like equal temperament. For this reason, it is the best form to tune for those musicians who would like to try historical temperaments on their pianos but are fearful of the more extreme results from the earlier temperaments. Victorian temperament is highly appropriate and authentic for music of the Brahms era. For the music of Bach, Mozart, Beethoven, etc., the earlier well temperaments are the most appropriate; but, Victorian temperament is nevertheless more authentic for these earlier composers than equal temperament.

In Victorian temperament, the chromatic scale sounds remarkably even although a small amount of key-coloring and the "characters of the keys" still exist. The features in Victorian temperaments that distinguish them from other well temperaments are the lack of any thirds or sixths that are altered or tempered by as much as a syntonic comma (21.5 cents) and the lack of any just intonation intervals except for the octave; therefore, in Victorian temperaments the contrasts of key-color effects are less than in the older well temperaments.

In the 19th century, there were two types of tuners. Some tuners purposely tuned slightly unequal temperaments in order to preserve the "characters of the keys." The remaining tuners were honestly attempting to tune equal temperament; however, because of the complete lack of acoustical knowledge of the essential testing intervals along with the obvious lack of training and ability for comprehending and hearing the very fast beatings of equally tempered thirds and sixths within the bearing octave, equal temperament was impossible on pianos (but not on organs) during this period of history. The order of notes tuned in the traditional bearing plans assured that the quasi-equal temperaments tuned by these tuners produced results that followed the traditional harmonic balances (key-coloration locations) of the older well temperaments. As long as there were no "wolf" intervals anywhere and one could perform with good effect in all 24 major and minor tonalities, the temperaments by these tuners were always called "equal temperament" during the 19th century, even though key-coloration still existed. Today, no one would dare define

Victorian temperament as equal temperament.

Some quotations from this era of history are listed as follows: In 1834, Johann Joseph Loehr wrote, "There never was a man capable of tuning by ear a pianoforte or an organ so as not to leave some inequality of temperament, and there never will be."¹ Also, he wrote, "Scheibler found, that although the ear may distinctly hear eight beats in a second, ... a greater task than that of counting four beats in a second should not be imposed upon the ear."² The professional 20th-Century tuner is expected to hear and compare 12, 13, and 14 beats per second as a minimum ability. In 1857, Augustus De Morgan wrote, "When equal temperament is required, the tuners have nothing to do with beats, except to get perfect octaves."³ An old professional tuner assured De Morgan "that he did not believe that any tuner gained equal temperament ... equal temperament was equal nonsense."⁴ He also wrote "The system of equal temperament is to my ear the worst I know of."⁵ Alexander John Ellis, the inventor of the acoustical unit called a cent, was one of the greatest acousticians who ever lived. In 1864 he wrote, "Equal temperament ... has probably never been attained in this country."⁶ The equal temperament instructions from 1869 in Dr. William Geib's book *Tuning the Piano-Forte*, were reprinted in several tuning text books through the year 1903. In Dr. Geib's book, there was no mention of beats or pulsations of any kind. His instructions for equal temperament consisted of tuning the upper notes of fifths so that they are "placed at the lowest point within the consonant interval."⁷ He wrote, "Fifths are as near flatness as may be, without being dissonant or flat."⁸ In 1875 Ellis wrote that "strictly equal temperament is a thing unknown in practice."⁹ In 1876, Robert Bosanquet wrote, "There are few tuners who can produce a tolerable equal temperament."¹⁰ However, this did not matter very much because "it is only on the finest modern grand pianofortes that the equal temperament is really offensive."¹¹ In 1877, Ernst Pauer wrote, "The key is in music what colour is in painting."¹²

In 1880 Ellis wrote, "The beats hardly last long enough to be available for the piano, which should be tuned to an harmonium ... Equal temperament is now generally aimed at though seldom really attained."¹³ "The number of beats in a second can be counted easily when it lies between two and five. Beyond five beats in a second there is considerable difficulty ... and, after six beats in a second, the result cannot be depended on."¹⁴ In 1880, C.A. Edwards wrote, "No matter with what precision the tuner exercises his art, with what skill he lays his bearings, still there remains the distinct character of each key ... No one quite seems able to tell us why our modern scales have each their own distinctive qualities."¹⁵ In 1880, H.T. Martin did not mention beats or waves but wrote, "Tuners sometimes instruct learners to tune certain fifths slightly sharp, and others a little flat ... but I advise you to get all fifths and octaves perfect."¹⁶ "Form in your mind what would be a perfect fifth ... or you may

sing it, and tune.”¹⁷ In 1889, William Staunton, S.T.D., wrote, “The equal temperament now in general use is a necessity of modern music. In this temperament the excess or deficiency [the commas, diesis, and imperfections, etc.] ... is distributed among all the keys, thereby rendering them all available for use.... There are, however, several shades or degrees of equal temperament, from the strictest uniformity to any amount of inequality which is still bearable. If all keys were made exactly alike, there would be an undesirable loss of their individual character, and no difference perceptible except in their degree of acuteness. To avoid this, some discrimination is commonly used in favor of certain popular keys, yet not to such an extent as sensibly to injure the effect of keys less favored. A difference is recognized at once between the major keys of D and A-flat, even though the instrument in use is said to be equally tempered. Some discrimination, therefore, has been exercised by the tuner; and sometimes the key which bears the greatest stress of imperfection is that which most attracts us by its beauty.”¹⁸ Chopin was the greatest master of all in making the more imperfect keys sound the most beautiful. In 1893, Herman Smith wrote, “Some piano tuners now have a hankering after the old system, leaving a wolf now and then, although professing to tune in equal temperament.”¹⁹ “The limit of beats that are countable is about 5 or 6 per second, beyond that the beats are recognizable merely as degrees of roughness, or perturbation.”²⁰ In 1907, Jerry Fischer wrote, “Some tuners, even now, will try to favor the flat keys.”²¹ In describing “a tuner in Chicago, of assured and honorable position...” in 1911, Dr. William Braid White wrote that “this man has been tuning for many years ... yet this man ... cannot tune a piano in equal temperament. I know, because I tried his work.”²²

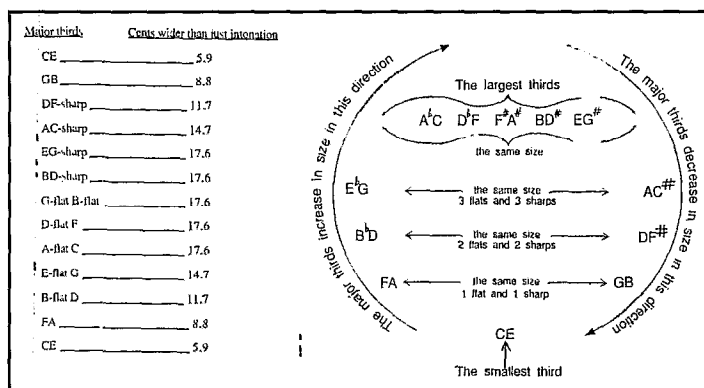
During the 20th century the academic community guided the tastes of the public by offering college and university degrees in music and art. Atonality in music composition was highly promoted as the music of the future, but true atonality cannot exist without the exact equally tempered scale; therefore, most 20th-Century music text books state that modern musicians require equal temperament. The historical developments of atonality and equal temperament in practice were simultaneous. The first evidence that pianos were beginning to be tuned according to today’s standards was by Edward Quincy Norton of Boston in 1887. Arnold Schönberg became the musical father of equal temperament when he composed his completely atonal *Three Piano Pieces*, Op. 11, in 1909. In 1910, Dr. William Braid White founded the American Guild of Piano Tuners, and by 1917 the majority of piano tuners were tuning in equal temperament worldwide.

The philosophy of atonalism has been promoted by academe to such an extent that the artful temperaments used for the tonal music of the past have been lost in practice. Temperament is either equal or unequal. In equal temperament, it is possible to have only 11 sizes of intervals that are smaller than an octave. In unequal temperament, it is possible to have up to 132 different sizes of intervals that are smaller than an octave. Thus, the historical tempera-

ments were more colorful.

Tuning Victorian Temperament

For tuning Victorian temperament by using the easy equal-beating methods that are historically authentic along with a minimum of test intervals, the reader is referred to Daniel Ressler’s article “Romantic Era Piano Tuning” published in the February, 1996 issue of the *Journal* on page 28. Also, read Daniel’s article on page 40 in the April, 1996 issue. Twenty original methods for tuning pianofortes that were published in English speaking countries between the years 1850 and 1886 are found in the book *Tuning*.²³ The purpose of the present article, however, is to furnish Victorian temperament instructions that produce the finest features and ideals of all the Victorian temperaments taken as a whole. More clearly, if the modern RPT tuners of today were transported back in time before the 20th century, certainly they would have a tendency to apply all their art, tuning techniques, knowledge of test intervals and inharmonicity, etc., to the Victorian temperament in order to create their finest workmanship. The Victorian temperament is thus idealized, but then it becomes as difficult to tune as equal temperament. The musical results of this are similar to the results recorded in 1885 by A.J. Ellis for the “Usual Broadwood Tuner” and a “Best Broadwood Tuner.”²⁴ The harmonic balance, circular form, and symmetry of the idealized Victorian temperament are as perfect as those published by Thomas Young in 1800. The overall string tension level on the bridges and soundboard is maintained at an exact A=440 pitch even though A itself is a shade flat and C is a shade sharp. Review how exact symmetry makes this possible by studying the chart on page 40 of the 1994 December issue of the *Journal*. The circular form is similar to that of the Prinz, Kirnberger III, Aron-Neidhardt type



ment described between the years 1752 and 1808.²⁵ The harmonic balance and form reveal that the Victorian temperament sounds similar to the Thomas Young well temperament of 1799²⁶ except that five major thirds among the black keys are identical, are tempered to beat slower, and are therefore less colorful. Major thirds are the most important intervals for determining color-characteristics in music. It can be seen that contrasts of color are the greatest

Continued on Next Page

Victorian Temperament

Continued from Previous Page

in the Prinz, Kirnberger III, Aron-Neidhardt type temperament, they are medium in the Thomas Young temperament, and they are the least in Victorian temperament. The charts of harmonic balance and circular form for the idealized Victorian temperament follow.

For those who wish to follow their own system or bearing plan that they are accustomed to, the rule is simple: Temper the 1/6 ditonic comma narrow fifths GD and AE and also the 1/6 ditonic comma wide fourths GC and AD to beat exactly twice as fast as they do in equal temperament. Temper all the remaining fourths and fifths (which are each tempered by 1/24 ditonic comma) to beat exactly half as fast as they do in equal temperament.

Tuning Rules for Victorian Temperament

Make certain that the tones D and G-sharp are in equal temperament at standard pitch. Inharmonicity always alters theory to some extent; nevertheless, the theoretically correct beat frequencies given below serve as guides.

Temper G and A below middle C from middle D so that the fifth GD is narrow and the fourth AD is wide. Both intervals must beat twice as fast as they do in equal temperament.

Temper E above middle C from the lower A so that the fifth AE is narrow and beating twice as fast as it does in equal temperament.

Temper middle C from the lower G so that the fourth GC is wide and beating twice as fast as it does in equal temperament.

Temper F below middle C from middle C so that the fifth FC is narrow and beating half as fast as it does in equal temperament.

Tune the lower E from the upper E.

Temper middle B from E above middle C so that the fourth BE is wide and beating half as fast as in equal temperament.

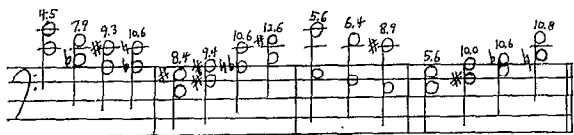
Temper F-sharp below middle C from middle B so that the wide fourth F-sharp B is beating half as fast as in equal temperament.

Temper B-flat below middle C from F below middle C so that the wide fourth F B-flat is beating half as fast as in equal temperament.

Temper middle C-sharp from G-sharp below middle C so that the wide fourth G-sharp C-sharp is beating half as fast as in equal temperament.

Temper D-sharp above middle C from A-sharp below middle C so that the wide fourth A-sharp D-sharp is beating half as fast as in equal temperament.

Check the following sequences for increasing beat frequencies.



This completes the bearing octave from E to E. The differences in cents between the notes of Victorian temperament and equal temperament are shown in the following chart. Notice the symmetry of these figures. This symmetry of minus and plus figures maintains an even A=440 pitch tension level on the bridges and soundboard.

D	0.000
C-sharp	-0.978
C	+3.910
B	-2.933
B-flat	+1.955
A	-1.955
G-sharp	0.000
G	+1.955
F-sharp	-1.955
F	+2.933
E	-3.910
E-flat	+0.978
D	0.000

Notes

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2. Ibid., 39.

3. Augustus DeMorgan, "On the Beats of Imperfect Consonances," *Transactions of the Cambridge Philosophical Society* 10 (1864), 129.

4. Ibid., 141-42.

5. Ibid.

6. Alexander John Ellis, "On the Temperament of Musical Instruments with Fixed Tones," *Proceedings of the Royal Society of London vol. 13* (London: The Royal Society, 1864), 418.

7. William Geib, *Tuning the Piano-Forte*, new and improved edition (Philadelphia: Lee and Walker, 1869), 6.

8. Ibid., 17-22.

9. Hermann Ludwig Ferdinand von Helmholtz, *On the Sensations of Tone as a physiological basis for the theory of music*, translated...from the third German edition with...an additional appendix by Alexander J. Ellis (London: Longmans, Green, and Company, 1875), 785.

10. Robert Halford Macdowall Bosanquet, *An Elementary Treatise on Musical Intervals and Temperament* (London: Macmillan and Company, 1876), 5.

11. Ibid., XIV.

12. Ernst Pauer, *The Elements of the Beautiful in Music* (London: Novello, Ewer and Company, (1877), 20.

13. Alexander John Ellis, "On the History of Musical Pitch," *Journal of the Society of Arts* (March 5, 1880; reprint, Amsterdam: Frits A.M. Knuf, 1963), 295.

14. Ibid., 299.

15. C.A. Edwards, *Organs and Organ Building* (London: "The Bazaar" Office, 1880), 181.

16. H.T. Martin, *Every Woman Her Own Piano Tuner; or, Hints and Aids to Piano Tuning* (Beaver Falls, Penn.: H.T. Martin, 1880-81) 19.

17. Ibid., 17.

18. William Staunton, "Temperament" in *Johnson's Revised Universal Cyclopaedia* (New York: A.J. Johnson & Co., 1889-1890), 7:743.

19. Hermann Smith, *The Art of Tuning the Pianoforte*, 3d ed. (London: William Reeves Bookseller Ltd., 1901), 15.

20. Ibid., 40.

21. Jerry Cree Fischer, *Piano Tuning* (Philadelphia: Theodore Presser, 1907; reprint, New York: Dover Publications, Inc., 1975), 98.

22. William Braid White, "A Question of Temperament," *The Music Trade Review* (July 29, 1911) : 45.

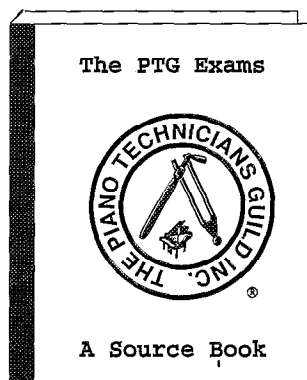
23. Owen Jorgensen, *Tuning: Containing the Perfection of Eighteenth-Century Temperament, the Lost Art of Nineteenth-Century Temperament, and the Science of Equal Temperament* (East Lansing: Michigan State University Press, 1991), 469-567.

24. Ibid., 534-58.

25. Ibid., 320.

26. Ibid., 264-65.

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Behold the Upright

Soundboard Repair & Getting Ready to Restring

By Don Valley, RPT, MM
Western Carolinas, NC Chapter

Assuming the piano is under contract for a complete rebuild, the piano will of necessity be restrung. Therefore, the procedure will be to unstring the piano and remove the plate, thereby allowing complete access to the soundboard from the top, as in a grand.

Prior to making any adjustments for unstringing, it is necessary to make provisions for ordering a new set of bass strings. For this you will need a few items: 1) A strip of heavy paper about 18" wide and long enough to cover the complete bass string area; 2) A sandpaper board similar to that used for reshaping hammers; 3) A large chunk of solid pencil-type lead or a solid graphite stick. You will make a paper pattern of the bass area with some sanded points and other rubbed areas. It is to your advantage to keep records - very meticulous ones. I suggest a file folder identifying the specific piano. Place any remark, sketch, direction, or unusual comment directly on the folder as well as any kind of sketches and other information on papers inside the folder.

Making the Paper Pattern

With the piano on its back, lay the paper over the strings. Items you will need to show well on the pattern are: the hitch pins, the bridge pins, beginnings and endings of windings, the upper bridge or V-bar or agraffes. Making certain the paper is laying flat on the strings, begin with your sanding stick to rub over the bass bridge pins. You will make a neat hole for each one; fit the paper down over these pins. This will serve to grip the paper as you pull it taut for marking the hitch pins with that large chunk of lead. Now mark (rub) the position of each hitch pin. Using the same lead, rub the start of each winding at the bridge and, with paper pulled tightly, mark the other end of the winding. This lets the string maker determine the distance from each before beginning the copper. Now with the sanding stick, mark the locator pin position on the upper bridge. Occasionally, there is just the bar or there may be agraffes; in this situation, do not use the sanding stick, but use the big lead and rub this location. No need to identify the tuning pins as the waste end of the string is sufficient. With your pattern complete, remove it from the piano and write the following information on it: the piano name, the serial number. Strings supplied as samples identified by number, not note. You will supply the first and last string of the single unison section, the bichord section, and the trichord section if there is one. For example, you may supply string #1, #10, #11, #38, #39, and #50; yet your bass section has twenty-eight unisons. Be certain your address information is also on the string pattern. Now you can fold it and ready it for mailing.

At this time, go ahead and remove the sample strings being sure to leave enough tuning-pin end to show the bearing bar point. Cut off the coils. Identify each string number with masking tape or a label and place them all in order on a wire loop. Make a circle of the strings to fit into your shipping box. Tape down any stray ends so as not to break through the box and cause damage. In a few days after mailing out to your string maker, you will receive a bright new set of strings.

Unstringing the Piano

With the pattern work done, you may begin the unstringing process. Let the tension down gradually by working one row at a time from one end to the other. 1/2 or 3/4 of a turn will be sufficient to relieve the tension as well as have freedom to remove the coils. A full turn expands the coil too much and gives trouble when removing the coils. For efficiency in removing the coils, I find it best to remove a line of coils at a time and cut them off. Then proceed to the next line. Otherwise, they get all twisted together and cause a lot of difficulty in the removal process. **Do not remove the strings yet.**

If you have not done so, you must determine how you will arrive at your scale. Many vertical scales are not listed in the Travis book (*A Guide to Restraining*, by John Travis, RPT). Often the scale will be written on the bridge or in the webbing area of the plate. If so, transfer this to a paper and include it in your file folder for this piano. Just be certain you know from which end—the bass or treble—the stringer wrote the scale. If there is a number under the highest string area, count and write from treble to bass. If there is a number under the lowest string area of the treble bridge, count and write from that direction. If you have no scale written in the piano and none in a book, you must measure with a micrometer and keep a record. For efficiency, to keep from shifting gears on each unison I am removing by switching tools, I suggest you have a strip of wood (1" x 2", or 1" x 3") with about sixty 1/16" holes drilled along the 1" side, spaced about 1/4 - 3/8" apart. Before you remove each unison of the strings, cut a 3" piece of wire, preferably the part where the damper touches, because it is clean, and place the pieces in this "scale stick." Then, once your string removal is complete, return to your scale stick. Sit down. Relax. Take your micrometer and determine the scale. Just a note of caution because of "Murphy's law." Once my strings are in my scale stick, I run a length of masking tape along the string pieces just for peace of mind! Get it?

Further Disassembly

You may, at this point, wish to remove the keybed and the arms. Many times this will come away in one unit just by removing the large screws which attach the arms to the cabinet sides. This will allow for a great deal more freedom as you continue your work and is likely necessary in order to remove the plate, when it is time for that. Remove the strings, being careful to keep them from scratching the soundboard. Prepare to remove the plate. On a cardboard box draw a large design of the plate with all screw and bolt positions identified. As you remove each plate screw, place it into the proper position on your box sketch. This insures returning these items to the same place. For the action bolts, be certain to number them. Measure from the plate to the end of each so they will be reinstalled precisely. Many times these are bent; just note their orientation in this matter. If you think there is something you might not remember, write it down or sketch it out. You cannot have too many notes when it comes to reassembly. With all the bolts, screws, and nuts removed, the plate can be removed. Sometimes in uprights the plate is fit very tightly. But with proper ingenuity, you can remove it.

Evaluating the Soundboard & Bridges

You are now down to assessing the soundboard. From the back of the piano, you have previously noted cracks or glue failure giving you cause for repair. Before taking on the job, you will have verified that the soundboard still has a crown. In essence, the board is no different in the upright than in the grand; there is just more of it and it is supported by ribs and glued to a perimeter. Be sure you check the board for soundness by drumming on it with the heel of your hand. Never rely on visual appearance only. By all means, check all around the perimeter. You can reattach ribs and do all the fancy shimming your heart desires, but if the board is unglued in rim areas, you have accomplished nothing. At this time you may want to give a quick visual check over the pinblock. Let us assume you are not going to need to replace it but will use size 4/0 pins in restringing the piano. Assess the condition of the bridges now, as well. The piano is never quite as accessible for bridge repairs as right now. We will

assume the bridges, aside from being dirty, are in sound condition.

Drying it Out

It is obvious the piano needs attention given to the cracks in the soundboard; some separation from the ribs is obvious from both sight and sound. So, first you must dry the board to allow the cracks to open to their maximum. I suggest hanging about four 25-watt Damp-Chaser rods under the board. Drape the top, covering it completely, and down to the floor with blankets such as those used in moving. Do not cover with plastic; this will retain the moisture you want to dissipate. Leave the piano in this condition, depending on the humidity in your shop, anywhere from overnight to two days. Check occasionally to see

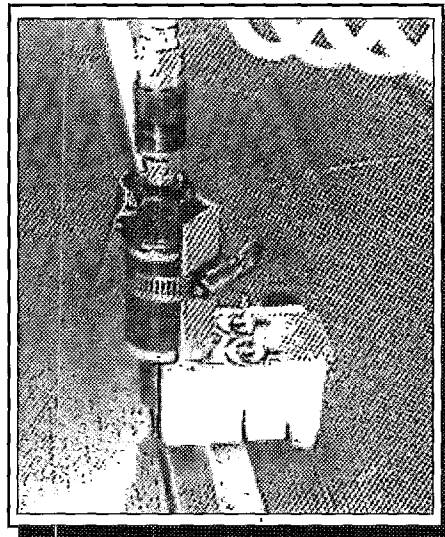


Photo 1 — Opening soundboard crack with die grinder and router bit, showing guide-rail and sliding block.

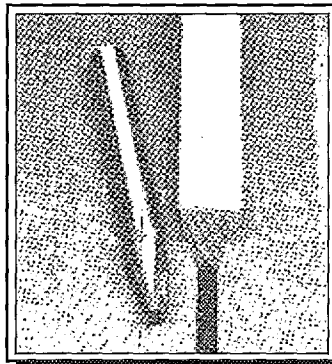


Photo 2 — Special router bit and matching spruce shim.

the crack expansion. You will be able to determine when there is no more opening up of the cracks. Prior to doing any shimming, reglue those areas of the perimeter where the board has lifted. Use large soundboard clamps and gluing blocks. Allow to dry.

Repairing the Cracks

The task now is to further open these cracks to fit the shims you will install. I suggest you use the apparatus for this created by Bill Spurlock. It is inexpensive considering the quality of the finished product and the control you have over the situation. One of the great advantages is that it takes care of what was always an area of frustration for me: soundboard cracks are not straight! This tool allows the opening to be straight, providing a perfect fit of the shim and a virtually unnoticeable repair once all is finished. Easy-to-follow and understand instructions are provided with the tool. For those not familiar with it, it basically is a block of nylon with guide grooves cut into it and holding a 1/4" die grinder with a carbide bit the same angle as the shims (See Photo 1). You get a 1" by 1/8" aluminum angle strip and, using double sided sticky tape attach it to the soundboard alongside the crack as a guide for this "router." Spurlock also supplies shims cut to match the cut made by the bit (See Photo 2). It works!

With the routing finished, it is necessary to reglue the soundboard to the ribs at points where separation has occurred. I suggest working along the same crack line, working glue into those loosened areas. Set up a beam over this crack and with a small block of wood on the board at each glued location, use a go-bar at each glued rib to pressure the joint adequately. You may also find it helpful to brace these ribs from the underside (or back side) by driving wedges between them and the backposts. Actually, many times this latter technique is sufficient to press the ribs for a firm glue joint. By working one crack at a time, your glue won't set up before you complete that area.

Once you have routed out the cracks, you must dry-fit your shims. Follow this by gluing both the shim and the open crack. Do not use hot glue here as the procedure is too time-intensive for that. Fit the shims into place, forcing them with your hands. Then place a beam of some sort across the top of the piano over each shim line. Clamp the beam to the piano. Use proper length "go bars" to keep steady pressure on the shims. Let it dry overnight. Proceed to remove all the clamping and pressure items, returning them to their proper storage

Continued on Next Page

Behold the Upright

Continued from Previous Page

places. Remove the excess shim material using sharp chisels, planes, and abrasive papers. Do this front and back.

Cleaning & Finishing

Up until now, the board and bridges have not been cleaned. Clean them now by scraping the finish off and blending the new shim right in with the rest. Scrape the bridge notches. Follow the scraping with sanding. Protect the bridge cap with masking tape. Finish the board and bridge with your choice of finishes. With the finishing complete, remove the tape from the bridges and apply Dag® to the bridge tops.

The last area of attention prior to restringing is the plate. If the finish of the plate is in good condition, sometimes just cleaning with a strong solution is adequate. I prefer to refinish all my plates. First, as above, wash the grime from the plate. Then follow that with rubbing it down with 4/0 steel wool for a good smooth feel. Follow this by cleaning it again with denatured alcohol to remove any soil or chemical debris left there and provide a surface compatible for spray adhesion. You may use a good quick-drying gold lacquer in spray-can form from your local hardware. I find this to be very convenient and have found a very acceptable product, so I stick with it. Spray your plate lightly two or three times rather than one heavy spray and make sure your coat is even. If it is uneven, it will be made more noticeable when the clear coat is applied. Do the clear coat once the gold is fully dry. Apply the first covering of clear lightly, also, to give the clear a foundation and to be certain it is compatible with the gold. There is a temptation to always apply too heavy a coat the first time; this usually results in a problem requiring the removal of all you have done, necessitating a new start. Be patient.

A final reminder: while the other jobs are setting in, polish the plate screw heads and de-rust the threads. A wire wheel is good for de-rusting if you do not have a sandblaster. Once your polishing is complete, dip the heads in clear coat to prevent premature rust from forming — they are steel.

Proceed to install the plate, rebush the tuning pin holes if needed, and prepare for stringing. Next time, we'll cover the restringing process. ■

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In Brief

This lesson will describe procedures for the two sustain pedal adjustments—lost motion and travel—as well as adjustment of the damper stop rail (often called “damper upstop rail”).

Getting Started

In order to pursue any serious study of piano technology, one must obtain basic resources. Catalogs from several piano supply houses, both large and small, are essential. Besides offering the necessary supplies, their pictures and item descriptions are valuable sources of information. Piano manufacturers' service manuals are also essential sources of valuable information. Most are available at no cost. Most important to participating in this Lesson Plan series are the PTG Exam Source Books, both the tuning and technical versions. Articles in these books will serve as reference material for the lessons.

Hands-on Session Setup

To teach this lesson in a hands-on format, you will need one or more grand pianos in good condition. New or good used pianos in a dealership are ideal. Action models are not suitable for this lesson.

Additional meeting setup should include:

- six wooden clothes pins
- two adjustable wrenches
- assortment of regulating tools
- hammer scrap felt for trapwork blocking

Estimated Lesson Time

Approximately one hour.

Tools & Materials Participants Must Bring

For this lesson, participants should obtain the following tools:

- two adjustable wrenches
- selection of general regulating tools

Assigned Prior Reading for Participants

PTG Technical Exam Source Book, pg. VIII.19 - V.III.23

General Instructions

Grand dampers are of course lifted either by the keys or by the pedal. It is essential to understand that each mode—lift by the keys or by the pedal—has separate means of adjusting its range of travel.

Damper Lift by the Key: The beginning of damper lift by the key is determined by the height of the damper levers above the key end felts at rest, as described in the previous lesson. Naturally, when a key reaches the end of its travel it stops lifting the damper. However, because the damper levers are not connected to the keys, they are free to continue rising due to their momentum even after the key has stopped. If this hap-

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LESSON PLAN

Technical Lesson #34

Grand Regulation — Part 15: Adjusting the Grand Damper Stop Rail & Sustain Pedal

By Bill Spurlock, RPT
Sacramento Valley Chapter

This monthly lesson plan is designed to provide step-by-step instruction in essential skills. Chapters are encouraged to use this material as the basis for special Associate meetings, or for their regular meeting program, preferably in a hands-on format. This method allows the written information to be transformed into an actual skill for each member participating.

pens, an objectionable “bump” is felt in the key as the damper assembly flies up, then falls back down onto the key again. The damper stop rail is provided to limit this unwanted additional rise. Note that the stop rail must not “stop” or limit the keys' lifting of the damper levers. Instead, it

serves as a kind of backstop or bumper to prevent damper rise *beyond* that done by the key. Therefore, the damper stop rail must have a very soft felt and be carefully adjusted to sit just barely above the damper levers when the keys are fully depressed.

Damper Lift by the Pedal: The damper lift rail must sit just below the damper levers at rest. If too high, it can contact the levers and prevent the dampers from resting with their full weight on the strings. If too low, there will be excessive lost motion in the pedal. In extreme cases, the lift rail may rest on the keybed dags, causing an additional lost motion space in the system—lost motion between the lift rail dowel and lift rail as well as that between the lift rail and damper levers.

This rest position of the damper tray is adjusted by changing the length of the pedal rod or adjusting shim material in the trapwork. Most modern designs have an adjustable rod as shown in Photo 1. For older pianos with solid rods, firm leather punchings can be added under the end of the rod in the pedal, or elsewhere in the system.

The pedal should lift the dampers no further than they are lifted by the keys. The damper stop rail is only intended to stop individual damper levers from flying up under their own momentum, not to stop the force of the pedal lifting the entire set of levers. Therefore, the pedal *must* have its own means of limiting travel. Ideally, this is a block of hard felt or an adjustable capstan on the underside of the keybed to stop the trapwork lever (see Photo 3). This type of stop adjustment is most reliable because it is not affected by adjustments that might be made to the pedal rod.

Order of Adjustment

To allow accurate adjustment of pedal travel and the damper stop rail, all damper levers must first be adjusted to rest at the correct and even height, as described in lessons #32 and #33. Once that is done, the sustain pedal and stop rail adjustments can be done in the following order:

Sustain pedal lost motion — Adjust the pedal rod until the lift rail is off of its stop (if present) on the keybed, and lost motion at the front of the pedal is approximately 1/4".

Sustain pedal stop — Play and hold down several sharp keys, then depress the sustain pedal fully. Observe whether the dampers lift the same height by the pedal as by the keys. Adjust the trapwork travel as necessary. If a capstan is present as in Photo 3, adjust it until damper pedal lift is equal to or just slightly less than damper key lift.

If the trapwork stops against a block of felt, shim or trim as necessary using firm blocking felt. Other designs may use blocking felt in the lyre itself. Some means of stopping trapwork

Continued on Next Page

travel *must* exist to prevent excessive wear or shifting of the damper stop rail. If no stopping mechanism is present, it is wise to install a blocking felt or felt and capstan stop on the underside of the keybed.

Damper stop rail — Because of their different leverage, sharp keys lift their dampers slightly higher than do natural keys. Therefore, the damper stop rail must be adjusted to just clear the damper levers of the sharps at full key lift. Damper levers of natural keys will then have a slight clearance to the stop rail when lifted.

One means of adjusting the rail is shown in photos 4, 5 and 6. First, make sure the stop rail is set a little too high. Then, near the end of each section, hold a sharp key down firmly. Clip a wooden clothes pin to each raised damper head so it rests on the adjacent dampers. You now have six sharp dampers held in the raised position. Remove the piano action and loosen all damper stop rail screws (note: some rails may be secured with brads as well. These should be protruding enough to allow you to pull them out). Tap the rail lightly to make sure it is loose, and allow it to fall onto the six raised levers. Retighten the screws firmly, and reinstall the action.

Recheck the adjustment by depressing random sharp keys, grabbing their damper heads, and trying to lift them further. The levers should be just touching the soft felt of the stop rail, but not compressing it.

Note: Steinway damper systems have a different geometry

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LESSON PLAN

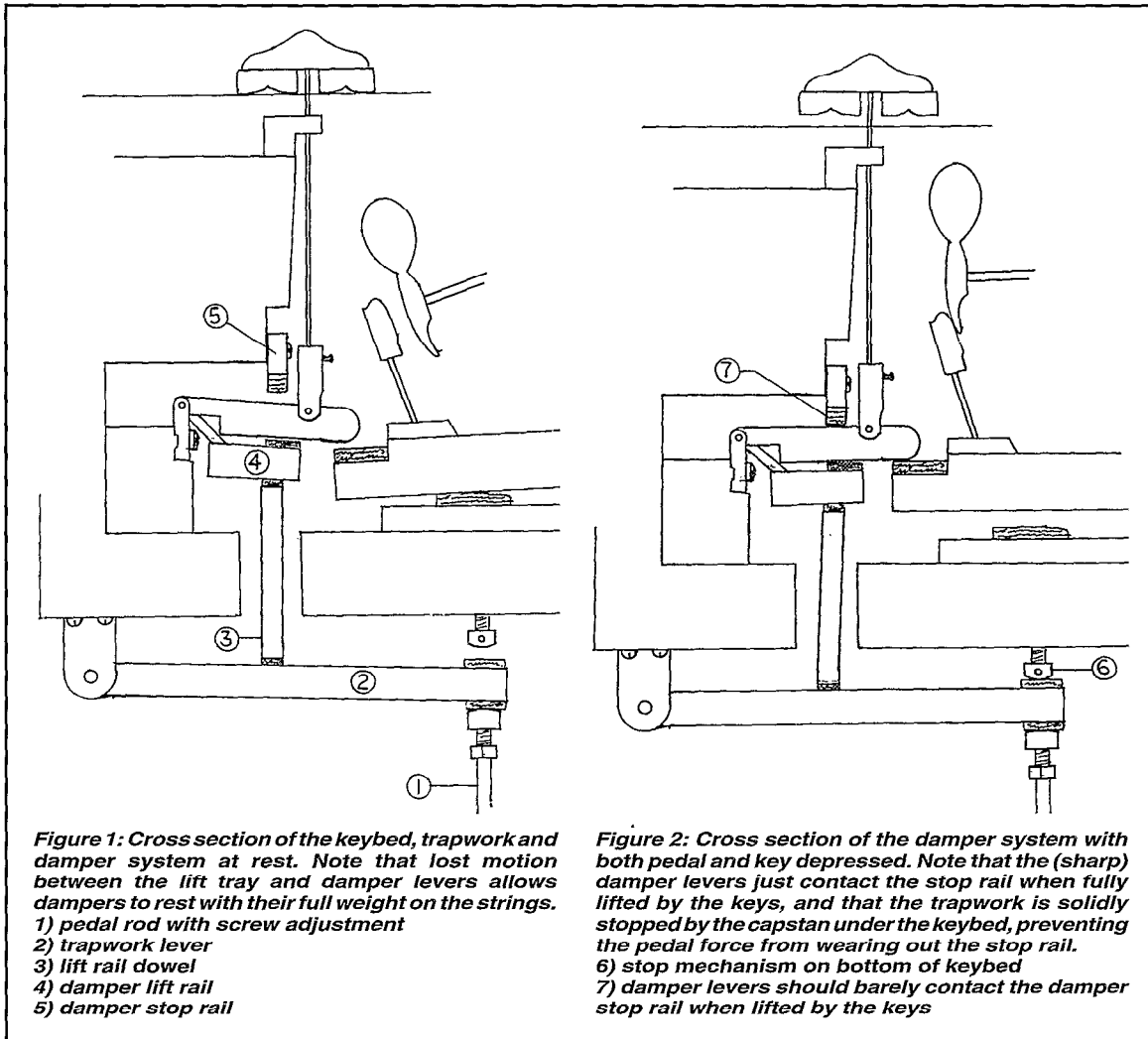
requiring a slightly different procedure for stop rail adjustment. For a detailed explanation of this, see the 6/91 *PT Journal* pgs. 19–21, or the Technical Exam Source Book reading assignment for this lesson.

Exercises

Participants should evaluate the sustain pedal lost motion and damper lift on a piano, and should observe or participate in any correction to the adjustments. Each should test the stop rail adjustment by depressing several sharp keys and feeling for additional lift. Even if the rail is adjusted properly, it can be raised to allow participants to carry out the adjustment sequence described above.

Summary

As stressed in previous lessons, a straight line of damper levers is the foundation of proper damper regulation. If damper levers are uneven in height at rest, and lift by the keys were to be accomplished by substantial shimming of individual key end felts, the damper levers will be uneven in height when lifted. Therefore, the damper stop rail will have to be adjusted high enough to clear the highest levers, leaving excessive clearance for all others. 



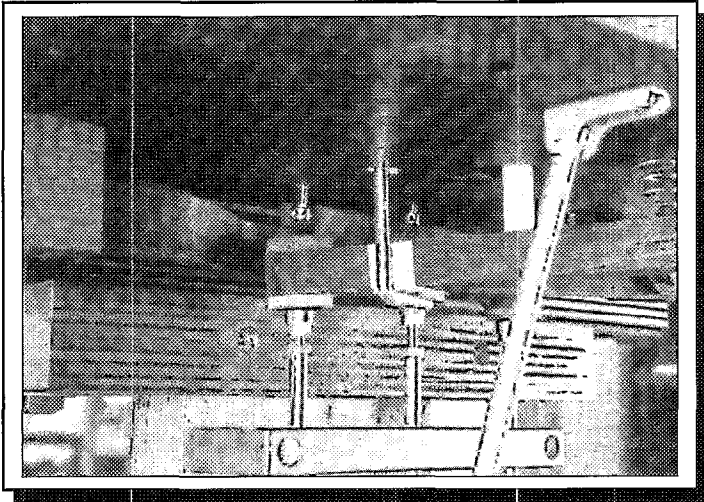


Photo 1: Typical trapwork design having a screw adjustment for lost motion on top of the pedal rod.

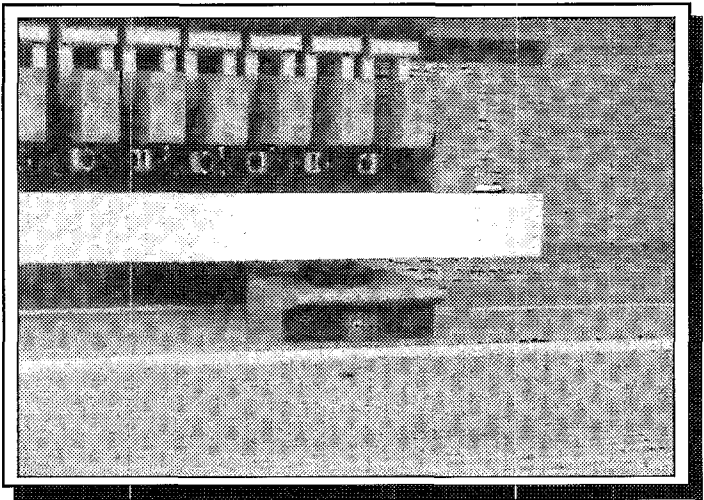


Photo 2: Lost motion is adjusted so the damper lift rail is not resting on the keybed dags, and is close to but not touching the damper levers (approximately 1/4" lost motion at the front of the pedal).

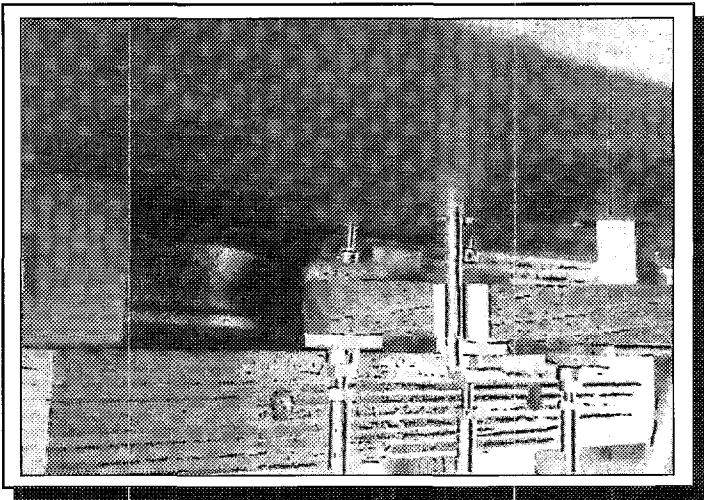
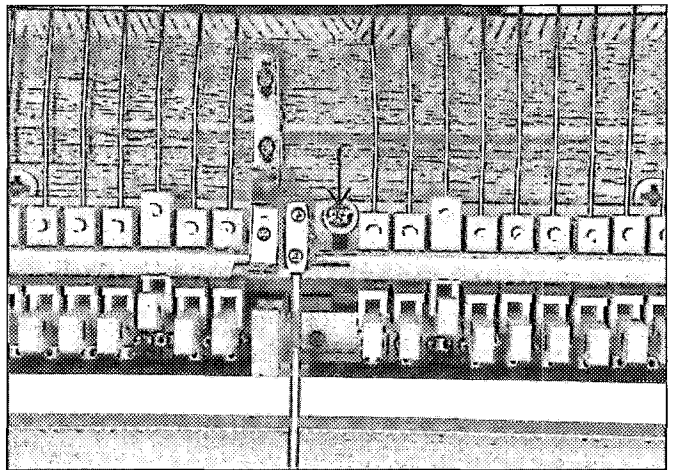
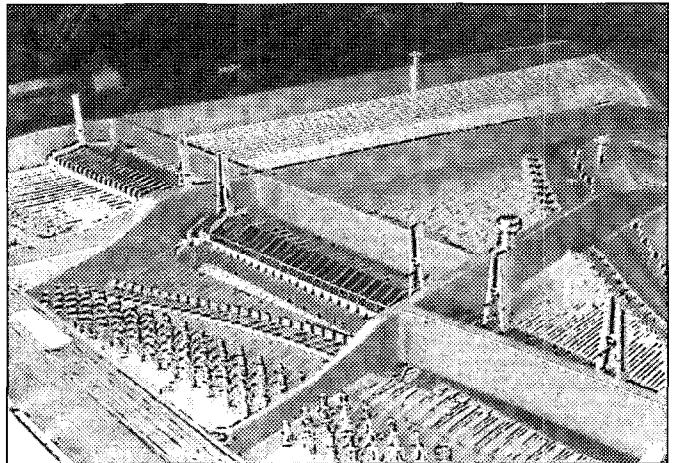
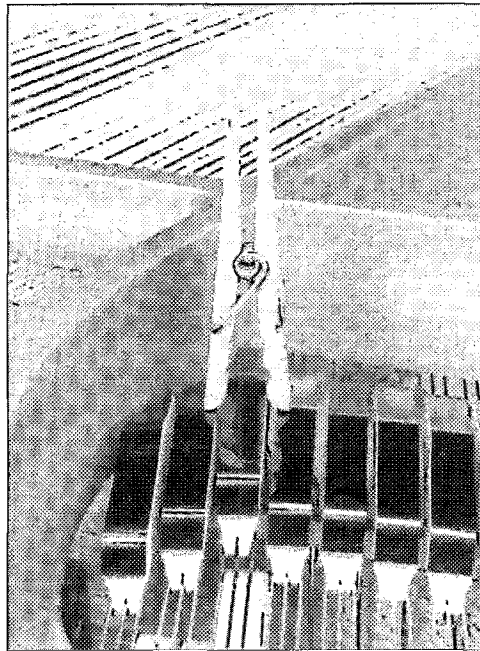


Photo 3: Typical system for stopping damper pedal lift using an adjustable capstan on the bottom of the keybed to stop trapwork travel.



Photos 4, top, 5, middle, & 6, above: To adjust the damper stop rail, first depress and hold a sharp key near the end of each section, attaching a clothes pin to each raised damper head. Then loosen all stop rail screws, allow the rail to rest lightly on the raised levers, and retighten.

Business Tips

By Bob Russell, RPT
Chairman, Marketing Committee

Charity Benefit

For the past two years, I have donated two "Grand Piano Service" items to a community auction to support our local philharmonic orchestra. My intent was to target my marketing efforts and donation toward an audience that was already interested in music. The first year, the chairperson of the Board of Directors of the philharmonic purchased the "prize." This year, the conductor won the auction for my prize. This led to my being asked to tune for the philharmonic's next concert. The package includes the PTG brochure, "How Should I Take Care of My Piano?", a letter of thanks for supporting the event, and my resume. I indicate that the service (tuning and cleaning) is good for 90 days from the day of the auction and for anywhere within a 20 mile radius.

— Beverly Kim, RPT

Understand the Customer

Technicians receive many telephone inquiries every week about their piano services. The majority of the calls come from consumers who don't understand our business and aren't sure what questions to ask to find qualified service. The first question is usually, "Do you tune pianos?" typically followed by, "How much is your tuning fee?" The second question irritates many technicians because we think all they are interested in are low prices. Many of us get very defensive and tend to give lengthy explanations to justify our fees. We need to realize that most potential customers don't understand what questions to ask to determine if they want us to service their piano. While some people are interested in low cost service exclusively, I find that the

majority of consumers want competent piano service first, and a reasonable price second. By overreacting and being defensive to the customer's question about price, we in fact have made price the main issue. What I recommend is to answer the price question in a matter-of-fact way and switch the subject quickly by asking them a series of questions about the service history of the piano, brand name and model, or the most convenient time for them to set up an appointment. By asking the potential client questions, you show interest in them and if done in a friendly helpful manner, you'll build *trust* and rapport with the client, which is far more important to them than price. *Of course*, during the conversation you should mention that you are an RPT. This will also help build trust and confidence. If you take these steps, the customer will probably schedule an appointment with you on the spot.

— Bob Russell, RPT

Piano Teacher Survey

One of the most satisfying and effective marketing ideas we've come up with is our survey of local area music teachers. We have them all complete a form providing information about their teaching style, schedule, openings, etc. Assembled into an attractive binder, we carry these surveys out on the job and let clients browse them whenever we're asked for a teacher referral. This saves us time in discussing teachers with clients, it allows the teachers to present themselves in their own words, and saves our clients much leg work in searching for a teacher. Both clients and teachers really appreciate this effort on our part, and we are seen as providers of helpful information by both. This in turn creates valuable word of mouth advertising and trust in the local

music community.

A number of technicians around the country have reported similar positive results since we introduced this idea a couple of years ago. This project can be done by individual technicians, but is also an ideal chapter project. For full details including the actual text of the survey form see our article on page 52 of the April, 1996, *Journal*.

— Bill Spurlock, RPT

Bulletins Valuable Tools

Technical Bulletins have become a significant tool for educating my clients and selling my services. The series of six offer some flexible applications:

Using a tang folder, I bind them as a set, which is a useful resource for teachers or administrators.

Some bulletins, like *Regulation*, *Voicing* or *Rebuilding* are given to a client when discussing a problem or mailed as part of a proposal to give my recommendations additional credibility.

Humidity Control works best if used with a digital hygrometer as suggested in the bulletin. It is effective to both demonstrate the hygrometer to the client and record the climate information on the chart on the back of the bulletin.

I don't use *Pitch Raising* to sell a pitch raise, as I could be finished by the time the bulletin is read. Instead, I sell and perform the work first, then use the bulletin as follow-up documentation.

Finish Care addresses an important topic for every piano owner. I often leave this bulletin for a client even if not specifically asked about caring for the finish.

During a service appointment, it saves me time if I can hand out a bulletin instead of spending precious minutes answering questions.

— Keith Bowman, RPT

Advertising Flyers

One of my most successful advertising ventures was with 8 1/2" by 11" flyer inserts that are delivered by Independent contracting delivery services. If you cannot locate these agents in the yellow pages or through networking, just call an existing advertiser and ask who delivered their flyer. Generally these flyers are inserted in or delivered with a local weekly shopper. The delivery cost will run between \$30 to \$40 per thousand and the actual flyers on bright stock will cost between \$40 to \$50 per thousand depending on volume.

The *Advantages* of this type of advertising are:

1. You can select or target the size and neighborhood (demographics) you are reaching. You can easily target one or many subdivisions, or arrange delivery weeks or months apart so you won't get all the responses in one week.

2. High Visibility—your ad is larger than a comparable costing newspaper ad. Bright colored stock can be chosen and your ad is not buried among a hundred other ads in a newspaper.

3. There is no need for clipping a coupon.

4. There is less chance of losing your ad. A newspaper may get thrown out, however, a bright colored flyer is easier to identify and to set aside and save.

Some special *Considerations* are:

1. Be sure to make your service quickly and easily identifiable with artwork or a logo. A nice piano logo will do.

2. A request that your flyer not be inserted into a newspaper. It has greater visibility and recognition if it is laid on top.

3. Color - bright fuchsia red or sunshine yellow are excellent paper stock choices. Many of my customers have mentioned that my bright colored reminders have stood out among their piles of papers.

4. You can offer a coupon, sell your experience, or note your quality service, or sell the advantage of local service. Be aware that each approach will attract a different clientele. The discount coupon

will often attract customers that only want minimum and inexpensive service.

Of course make sure you hire a credible delivery service. There are some dishonest agents that sometimes only make partial deliveries. A closing positive point is that I've gotten business over 4 years after distribution from people who saved my local flyer.

—John R. Shebesta

Simple Sales Rules

When confused or overwhelmed with information, 60 percent of prospective buyers will postpone their purchase decision. To increase your chances for increased sales you might try these tips:

1. Keep verbal technical information concise and simple.

2. Try to limit your presentation to three main points.

3. Stress more the benefits that the item or service will bring to the client.

4. When providing supporting facts such as PTG brochures and technical bulletins, highlight with a marker the main points that you have verbally presented.

5. Avoid photo copies of PTG publications. Besides violating copyright laws and denying your professional organization of increased revenues; *the use of photo copies* portray your business and services as cheap and second rate.

6. Send a follow up letter that briefly summarizes your recommendations for service or repairs.

7. Ask for the sale.

A thoroughly satisfied customer who has your company card can prove to be a valuable asset to your business growth. When they ask for your card give them three and say, "you might have a friend or neighbor who may be needing quality piano care as well, here are a few extra." Also, include at least two in any customer mailings, after all, you aren't buying these cards to keep stockpiled in your file cabinet.

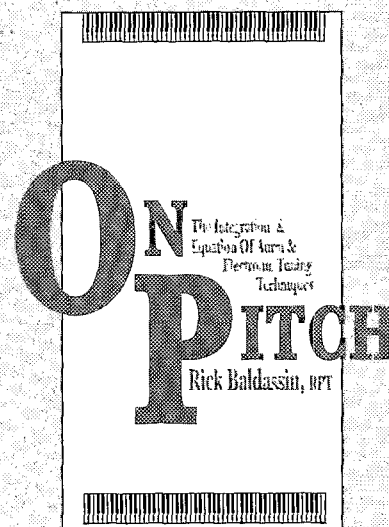
—Alan Hallmark, RPT

Now Available

Rick Baldassin's

On Pitch

The Integration & Equation of Aural & Electronic Tuning Techniques



PIANO
TECHNICIANS
GUILD

PTG member price: \$18

Non-member: \$20

Plus shipping

Piano Technicians Guild

3930 Washington

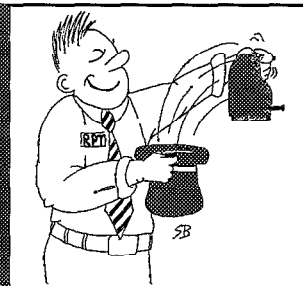
Kansas City, MO 64111

(816) 753-7747

Fax: (816) 531-0070

Grand Illusions ...

The Page for Serious Cases



Don't Toss It — Mulch It!

By Doug McKay

Hello again! I hope that everybody had a safe and happy holiday season.

Following on the success of our video *Dispose of Your Spinet Safely*, we've made it even easier to get rid of those unwanted instruments: the Piano Composting System. Our kit contains a mulching machine for reducing the wooden piano parts, and a composting bin to put in your back yard. Plus, two free bags of fertilizer to get the reaction

started! (please, do not put any metal parts in the mulching machine. You will ruin the blades and void the warranty.)

Over the winter Valley Hi was purchased by The Stencil Group and now is a wholly owned subsidiary. You'll be glad to know that you can expect exactly the same quality of products and services as before. However, all prices will be going up by approximately 45 percent.

Many thanks to Ziegler &

Associates, the ad firm who wrote our new motto "Valley Hi - where quality isn't just a motto, it's a slogan." (You wouldn't believe how much these guys charge. Another reason that prices will be going up.)

Always doing whatever it takes to get you to buy.

Turn Any Meal Into a Business Deduction

By Dr. Bob Frappels

The IRS says that in order for you to deduct a meal, you must discuss business before, during, or after the meal. Suppose you're at a restaurant.

Server: "May I help you?"

You: "Yes. I'd like the Cap'n Carl Flounder Meal Deal, for here."

(sound of register beeping)

Server: "Would you like cheesecake with that today?"

You: "Would you be interested in a full humidity control system for your piano?"

(blank look from server)

You: "I'll take that as a no. And I'd like some extra ketchup, please."

You may now deduct the entire meal. Remember, if pianos are your life, then *your entire life is deductible.*

— Bob Frappels holds a Doctorate in Pianoölogy from the Whole Piano Healing Institute in Narberth, PA. He is an expert in all aspects of piano tax law.

You too can be a Doctor of Pianoölogy! Just fill in the correct form and pay the required fee.

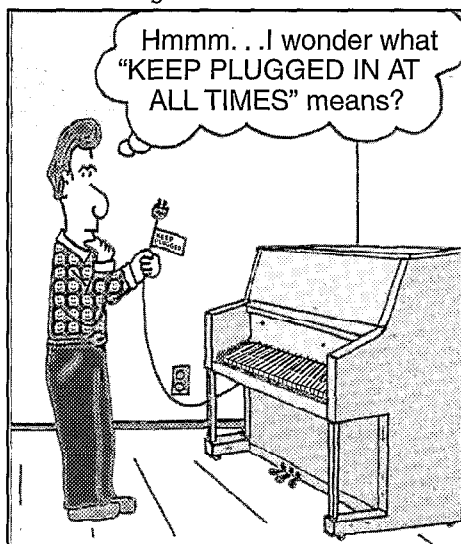
Tuner Personals

Dear Mrs. Roitman: I accidentally locked my tools inside your house. When are you coming home? It's been two weeks now. VT Box 995, voice mail 7742.

PIANOMAN Adventures

by Alan Hallmark

After years of research and development piano humidity control hits a stumbling block — human intelligence — or rather the lack of it.



©1996 B.A.S.S./HALLMARK

Going Out of Business! Everything Must Go!!

(Well, okay, not really.)

Rubber Buttons	\$.45
Sheet Music	3.00
Rubber Sheets	25.00
Fake Vomit	5.00
Real Vomit25
Player Piano	7,595.99
Ex-Player	500.00
Future Player	2,000.00
Sound Boards	1,250.00
Unsound Boards	2.75
Piano-Shaped Tomatoes75
Cat Fleas10

Piano Conversion Kits

Wet Bar	\$500.00
Jet Ski	2,000.00
Bread Maker	200.00
Laser Printer	699.00
Surface-to-Air Missile ..	2,000,000.00

Health & Beauty

Piano Soap	1.00
Piano Shampoo	3.50
Piano Conditioner	2.00
Piano Toothpaste	2.50
Piano Floss	1.50

Valley Hi Piano Supply, 24th and Meadowview, Sacramento, CA 95822

[Doug McKay and Dr. Bob Frappels may be contacted c/o Mark Stivers, RPT of Sacramento, California.]



Ethics in Our Profession

By Sid Stone, RPT
Chairman, Ethics Committee

ETHICS: *The rules or standards governing the conduct of a person or member of a profession.*

The Piano Technicians Guild has a Code of Ethics which each member is expected to know and to keep. Is the tuner in this month's cartoon upholding our Code of Ethics? Let us review PTG's Code of Ethics and see.

1. I will act honorably and in a professional manner.
2. I will render the best possible service under the circumstances, always keeping in mind the best interests of my client

Are You Through Already?

We need to go no further with our Code of Ethics to determine Mr. Cheatum's ethics. His retort may not be serious enough to bring charges against him, but he is not acting in a professional manner. He may think he is the best tuner in the world and the fastest; but that is no reason to be insolent. Some opportunistic lawyer might even consider Mr. Cheatum's remark harassment.

How should he have answered her question, "Are you through already?" Instead of my suggesting a possible proper response, I will challenge you to come up with your own. You will need a response that is not offensive or intimidating.

Several years ago an old tuner (I'll call him Sam) checked out a piano bench in the home of a client and informed her, "Lady, you have loose legs." For those of you who are in the NOW generation, the antiquated phrase "She has loose legs," has been replaced by, "She sleeps around." Now you know. You may think that a suggestive comment is clever, but the client may think otherwise. (Sam is no longer with us).

Speaking of ethics and harassment, another area is touching. We used to have more freedom in this area in the past before being charged with improper behavior. Today, if a waiter touches a female diner, he gets into trouble. But if a waitress touches a male diner, what does she get? I'll tell you: she gets a larger tip! "So much for equal rights," as Sam would say.

Questionable comments and touching are to be avoided if we want to main-



tain high ethical standards and uphold PTG's Code of Ethics. The vast majority of piano tuners do not need this admonition; but if it prevents even one tuner from being charged with harassment, it is worth it.

What About Tuning Ethics?

When it comes to ethics in our profession, we usually think about poor service and overcharging for services performed. (More about that later.) What about tuning ethics? We are expected to do our best, whether it is repair, regulation or tuning. Is ethics involved regard-

ing the time it takes to tune a piano? The client in this month's cartoon apparently felt that Mr. Cheatum did not take enough time to tune her piano.

In my nearly 50 years of tuning pianos I recall one client who questioned the time it took me to tune her piano. The piano kept in relatively good tune from one tuning to the next. One time I was finished in an hour, and she called my attention to that. This I did not appreciate. Six months later she remarked, "This time you took 55 minutes." I did not appreciate that, either. After the next tuning she said, "You did it in 50 minutes today." I do not remember what my response was, but she continued having me as her piano tuner. Remembering our Code of Ethics, I did not yield to the temptation to say, "Mrs. _____, your husband is a lawyer. If he can win a case in 50 minutes, should he take an hour and a half to do so?" An analogy carried to absurdity would be what Sam might say: "Lady, if it takes you 50 minutes to bake a cake (Sam had no idea how long it takes to bake a cake), would you leave it in the oven for an hour and a half?"

When does the tuning time become an ethical question? If I thought that tuning a piano in 50 minutes were unethical, I would not have mentioned the incident. However, there is no disagreement in another situation. A tuner, not a member of PTG, tuned six school pianos in 30 minutes, according to the custodian.

You Can Get Away With It, But ...

Then there is the tuning situation that all of us may encounter. If the client is not home, or leaves before you are finished, are you tempted to spend less time for the tuning? "Fess up, now!" You can get away with it, and she won't know the difference. Even if you are behind schedule, you should not take advantage of the situation.

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Ethics in Our Profession

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What about the piano in a home where there are little changes in temperature and humidity? What do you do when you find a piano so well in tune that it could possibly pass the PTG Tuning Test? Should you tell the client that her piano does not need tuning? Think about this for a minute. Would it be unethical to charge for a tuning in this situation? I say "No," and I'll tell you why. In my area I do come across such pianos from time to time. I do not say anything to the client before tuning regarding its tune. I go ahead and tune it. In most likelihood she has been told by me or by the manufacturer that her piano needs tuning every six months. To tell her that her piano does not need tuning would only confuse her.

Refine the Tuning from 80 Percent to 90 Percent

My suggestion is to refine the tuning from 80 percent to 90-plus percent, CTE level, if you know how to do this. If not, I strongly recommend your witnessing a piano being prepared for the tuning test. You will see that refining the tuning can take as much time as a normal tuning. This does not mean that you should be satisfied leaving a piano at 80 percent. My experience as a CTE in preparing pianos for the tuning test convinces me that it is as difficult and as time consuming to improve the tuning from the 80 percentages to the 90 percentages as it is from the 50 percentages to the 90 percentage.

If you can not improve the tuning to 90-plus percent, there are other things you can do. If you allow yourself a certain time span for the tuning and you do it in less time, you can always find some minor service to fill the remaining time. There may be simple repairs and minor regulation. There may be a pedal squeak or other noises or buzzes. Don't forget to check the bench for loose legs, but be careful in what you say to the client. These are a few of the possible extra services you can do to make it play better and look better.

He Boasted the Lowest Tuning Rate in the Area

You can always find something that can improve the touch or tone of the piano. At least that is what I was told by the dealer for whom I worked many years ago. However, to him such additional service was not free, but was a good source

of income. He boasted the lowest tuning rate in the area: \$6 per tuning while others charged \$7 or even \$8. (I told you it was many years ago.) When he sent a tuner into a home, he had a policy that was anything but ethical. The tuner had to come back not only with the tuning fee but also with an equal or larger amount for other services the piano needed. The total number of tunings I did for that man was one.

With this in mind, if you have a comparatively low basic tuning fee, but expect to make up the difference or more in other work not called for, you are guilty of unethical business practices, *period*.

Now That is Really Unethical

When we think of ethics we too often think of ethics in other professions than our own. A piano dealer may put a competitor's piano on the floor for comparison with the ones he is selling. There is nothing unethical about that, except if he asks the tuner to "de-tune" the piano and adjust it out of regulation. If I had not been so hungry, I would have terminated my employment then and there. Another incident in which I was involved regarded a 100-year-old Steinway grand that was completely rebuilt. The manager of the store put the number "1" in front of the serial number, making the piano 40 years younger than it really was. Now that is really unethical.

Recently I overheard a potential customer asking about a well-known competitor's brand not sold in the store. "They are good pianos, but they do not hold up very long." My advice to anyone looking to buy a piano in a store is this: the more a salesman runs down a competitor's piano the faster you should run out of that store.

Take Will Cheatum, Our Chapter Didn't Want Him

Much could also be said about auto mechanics, about lawyers, about politicians, and even about doctors (my son excepted). There are members of all professions, including ours, whose ethical conduct is less than exemplary. We should never take solace in the idea that other professionals are crossing the line, so it might be all right for us to do so.

The examples above should help to emphasize the need for good ethical conduct in our business. For example, take Will Cheatum (*You* take him. Our chapter did not want him.) Did you notice in the cartoon a flagrant breach of PTG's

rules? This would be serious enough to bring charges against him. Mr. Cheatum's violation is found in Bylaws Art. II, Sec. D, Par. 5, which states that the words "Associate Member" must be in letters no smaller than those used for "Piano Technicians Guild," whether on the tool kit or business cards or letterheads.

Under the PTG disciplinary code, Art. I, Sec. B, Par. 1, "It is the proper duty of each chapter to take cognizance of the conduct of any member of the Piano Technicians Guild within its jurisdiction and for any violation of the Bylaws, Regulations, and Codes to vindicate the law and administer justice." Chapters should check the local yellow pages to make sure their members are adhering to PTG's rules.

Whereas improper advertising is easy to detect, there are ethical implications in less obvious situations. For example, when you break a string during tuning—Yes, I said, *when you break a string*, and not what I hear over and over again: "I don't break strings, but strings break." In my opinion nine times out of ten it is the tuner's fault. It is either putting the tuning lever on the wrong pin or improper use of the tuning lever.

During the first few years in this business I experienced some string breakage. Almost without exception it was my fault. The past several years I have had only one string break. That string was very rusty, and the client was warned.

I don't break string because I put the lever on the right tuning pin and know proper hammer technique. If you tune enough pianos, you can tell if a string is about to break. I could tell you what to do in that case, but this is not a technical treatise... Is it ethical when *you* break a string to charge for it? Some of you may disagree, and that is your right.

May I Wash My Hands and Use the Bathroom?

Getting back to our hero, Will Cheatum: He addressed her, "Lady." I can not imagine a woman being addressed that way. Then he told the client what he was going to do. Is this acting in a professional manner? Most clients do not object to the request if made in a professional manner. What would that be? This question was raised at a recent PTG Convention. The suggestion was, "May I wash my hands and use the bathroom?" That takes the cutting edge off body functions about which we do not like to think. I see two problems with that

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The New Piano — Are We Killing the Industry?

By Don Valley, RPT
Chairman, Economic Affairs
Committee

As I think back over my years of piano service, trying to satisfy my clients as their needs arise, one area of need that has frequently surfaced is that of piano improvement or replacement. Now, from the time I first began to delve in piano technology, I loved to take a sick piano and use it as a test case for all kinds of new knowledge, get it into vastly improved condition and sell it. So, I got rather good at it (at least I believe I did). But I quickly ran into a situation where I was unable to satisfy a client whose piano I had serviced for many years — that person was going to buy a *new* piano. I have found out over time that there are those people who are going to buy a new piano just because they are going to buy a new piano! It did not make any difference what kinds of pianos I had in storage and in my shop waiting for rebuilding or whatever. Even though they might exit my shop not being able to be distinguished from a new piano, some customers just require a new piano.

Back in those years, not too long ago, I could lock in with several companies who were willing, and anxious, I may add, to align themselves with technicians as representa-

tives of their product. So, I was able to satisfy my clients by working in their best interests. I recall on a few occasions piano manufacturers desiring to “make their mark” or “get established” in the U.S. They appealed to the technicians by marketing the idea that now, at last, technicians not attached to some retail piano company could supply new pianos to their clients. The company’s desire was to have their product represented by technicians because of the unusual familiarity technicians have with all aspects of pianos. Therefore, it would naturally be assumed by the customer that the piano represented by the technician would certainly be one of high standards and extensive durability.

There have been those companies that have impressed the technician with a fine instrument. The technician has successfully impressed the piano buying public as to the credibility of the piano company. Then, when the reputation was established, the U.S. marketing division for the company somehow switched philosophies and began to follow the path of all others by having only retail piano compa-

nies market their product and closed off the availability of one-by-one purchases of the independent technician.

Considering the plight of the piano manufacturing industry here in the United States, and the declining sales trend of the new piano market, could not this trend be reversed by having pianos also represented by the independent technician? Keeping in mind the nearly 4,000 technicians in the Piano Technicians Guild alone, could not several sales of new pianos per year by each member, as well as those not numbered among us, be of significant value to an industry in fast decline?

Perhaps this is where we are in competition with ourselves. For the most part, when a technician or major rebuilder seeks to service his client, he searches for something he, himself, can provide. By not having access to the new market, the “like new” rebuilt or remanufactured instrument will be recommended as a viable alternative to the new. In essence, because the technician is locked out of the new piano market,

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Ethics in Our Profession

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answer: (1) If you wait until you are through tuning, the request to wash hands might imply the piano was dirty. (2) “May I wash my hands and use the bathroom?” — *In that order?*

This article on ethics in our profession is intended to make you aware of your professional behavior and your own reputation as well as the Piano Technicians Guild’s reputation. Much more could be said about ethics in our profession, and that may come later.

— Sid Stone, RPT

It was the Chapter against the State of Minnesota

Addendum: We should be concerned not only about the ethics of the individual PTG member as he or she is servicing pianos but also chapter action that may be much more serious.

A necessary reading for every chapter officer is the excellent article by Dennis Kirk in the November *Journal*, Page 57.

The Twin Cities Chapter (an outstanding chapter in the Guild) found itself embroiled in an ethics situation involving the matter of price fixing.

It was the chapter against the State of Minnesota. It was pointed out to them that an individual convicted of a criminal violation of the Sherman Anti-Trust Act could be fined heavily and imprisoned. Conceivably this could apply to *every* member of the chapter. Scary, isn’t it?

There should be absolutely no discussion of prices in a chapter meeting, or even in an informal meeting of two or more members. Seminar and Convention instructors should be especially careful not to ask what is being

charged for piano tuning and repair.

If you are not convinced about this, I hope you would get the Anti-Trust Guide from the Home Office. In this publication we are admonished to avoid discussing prices past, present and future. Also, we are not to exclude applicants for membership for competitive reasons. For example, if an applicant has advertised rates that might be “cut-throat,” he or she can not be excluded on that basis. Furthermore, we have to be careful in chapter meetings or in “rump” sessions discussing such situations.

Let us hope that no other chapter will ever have to go through what the Twin Cities Chapter experienced.

The New Piano — Are We Killing the Industry?

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there has arisen a reason to provide pianos in new condition. The increasing number of major rebuilders provides unprecedented competition for the new piano market. Sophisticated rebuilding shops have been established throughout our membership. The same for those not affiliated with PTG.

Are we seeing a trend here. Are we seeing "the survival of the fittest" in action? Are we reaching out for that which is unattainable? Are we going to see further demise of the new piano industry because independent technicians are closed off from acquiring what their clients want? I have heard that remark many times lately, and more and more frequently as time progresses — that the rebuilder is the wave of the future — not new piano sales. There seems to be a dichotomy here. Are we, of necessity — and yet not of preference, greed or determination — going to be instrumental in being responsible for the reduction in new piano sales? Of necessity, are we meeting a need with viable substitutes that the new piano industry could take advantage of if only that industry would include the independent technician as a business partner?

When it comes right down to it, who is better equipped to represent all aspects of the piano than the one who services it? For the most part, the retail establishment has hired sales people who are knowledgeable in factual material fed to them from the piano manufacturer about their own product. This is all well and good. It is not as complete as the in-depth knowledge of the technician who deals with the intimacies of pianos of many kinds all day long, every day.

Most clients of technicians have such a reverence for the mystique of that specialist that they will take the technician's recommendation over most other sources. When they realize their specialist is not able to provide a new instrument, they are left at the mercy of the world. Often the results of the decision made under such circumstances are disheartening and tragic. Perhaps it is time for the manufacturers to assess their position on this matter. We all realize change is not easy and not popular. However, sometimes for the sake of survival, it becomes necessary.

For example, right now I have a situation where a client purchased a new grand. She is a very accomplished teacher and performer. The purchase of a new

grand has resulted in a very unfortunate circumstance where the piano she was influenced to get was defective in a major way. Had she had the wisdom, knowledge and experience of a technician, this would not have happened. The quality was not up to what she was accustomed to

working with; as a result the performance of the instrument could not meet her standard. I had to tell her that after the fact, as I was brought in by the manufacturer to provide "an expert's opinion." This teacher left a message for me a few days ago to "please find me a piano."

Dearborn Convention Update

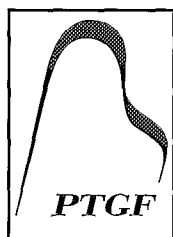
(AE) Complete Concert Tuning — *Virgil Smith, Chicago, IL Chapter*

In this class I will do a complete concert tuning using a temperament in which the correct octave stretch and the piano itself determines correct beat speeds throughout. I will explain and illustrate octave tuning techniques that eliminate compromise between correct octaves and consistent interval beat speeds and make possible a tuning superior to a machine tuning. Tuners can benefit from hearing someone else do a complete tuning.

Sat., 4-5:30 p.m. (Royale)

Virgil Smith's class description was inadvertently omitted from the 1996 Dearborn Convention & Technical Institute brochure published earlier this spring by the PTG.

PTGF Benefactor of \$10K Memorial



The Piano Technicians Guild Foundation has received a gift of \$10,000 in memory of Alec H.B. Walker and Margaret Walker of Englewood, FL.

Alec H.B. Walker came to PTG in 1971 after working in Westinghouse Electronic Corporation's research labs. He had completed his post-graduate work at the University of London. He was trained in the Pittsburgh, PA, shop of C.R. "Shorty" Wagner, who was then Northeast RVP. He was examined by Wagner and William Connelly, and was accepted into the Pittsburgh Chapter as Craftsman

member #3086 on Nov. 28, 1971.

Walker moved from Pittsburgh to Florida in 1973. He was a member of the Southwest Florida Chapter and later became a member-at-large. Although he was no longer able to attend the Southwest Florida Chapter's meetings, he continued to send a financial contribution to the chapter. In 1986, he was granted Senior Member status.

In a 1972 letter to the Home Office, he wrote, "I hope that in the future I may have a chance of assisting some other new PTG member as generously and competently as I have been helped."

He died Nov. 30, 1990, at the age of 77. Margaret Walker passed away recently.

Grant for Continuing Education

Dear Mr. Goldsmith,

I wish to express my gratitude to you and the Piano Technicians Guild



Dianne Lawson

for the award granted to me for continuing education. In another month I will have completed 10 hours toward the Masters Degree I pursue. Your award will cover

most of the tuition for the fall semester of 1996, when I will enroll for five more hours of class.

It is gratifying to know that there is support for mature students as well as High School graduates. I hope to put my additional study to good use in teaching and performance, and to continue my lifelong interest in support of music.

Sincerely,
— Dianne Lawson

Yamaha's Little Red Schoolhouse Celebrates 25th Anniversary

BUENA PARK, CA — Keeping up with the piano industry's latest maintenance and service techniques is vital for today's top technicians. For the past 25 years, Yamaha Corporation of America has offered its dealers and technicians a unique

Yamaha, and I have to be able to meet their demands.

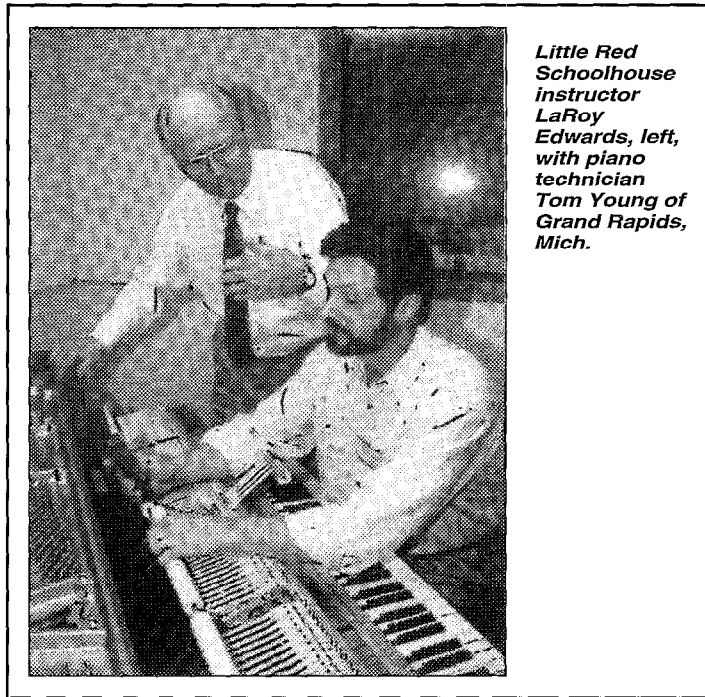
The school, which was started in September 1971, is offered free to experienced piano technicians sponsored by Yamaha dealers. More than 900 technicians have attended the seminar and there is a waiting list for technicians wanting to attend. In fact, two of the 1995 seminars were filled with technicians who applied for participation in 1992.

Administered since its inception by instructor LaRoy Edwards, the *Little Red Schoolhouse* provides an in-depth review of the 37 steps to grand action regulation. Technicians participate in specialized training sessions that include voicing, tuning and vertical regulation instruction. During the training program, each participant is provided a personal grand and upright piano with a complete set of tools for their use.

Edwards likens the program to taking an auto mechanic who is used to working in a regular service station and showing them how their job is done at the Indianapolis 500 raceway. "The *Little Red Schoolhouse* is ultimately the most challenging and informative continuing education instruction available to piano technicians. Through their participation, technicians can ensure that their customers enjoy a lifetime of superior performance from their Yamaha pianos."

An important aspect of the *Little Red Schoolhouse* is its low student-to-teacher ratio. In a typical session, 6 students are taught by 2 teachers. In this intensive environment students receive personal attention, precise instruction and immediate feedback on their progress. At the end of their session, the technician tests what they have learned with a challenging exam.

As Yamaha develops its piano technology, the *Little Red Schoolhouse* continuously enhances and upgrades its curriculum. The training program was recently expanded to include instruction on the servicing of Yamaha's revolutionary



Little Red Schoolhouse instructor LaRoy Edwards, left, with piano technician Tom Young of Grand Rapids, Mich.

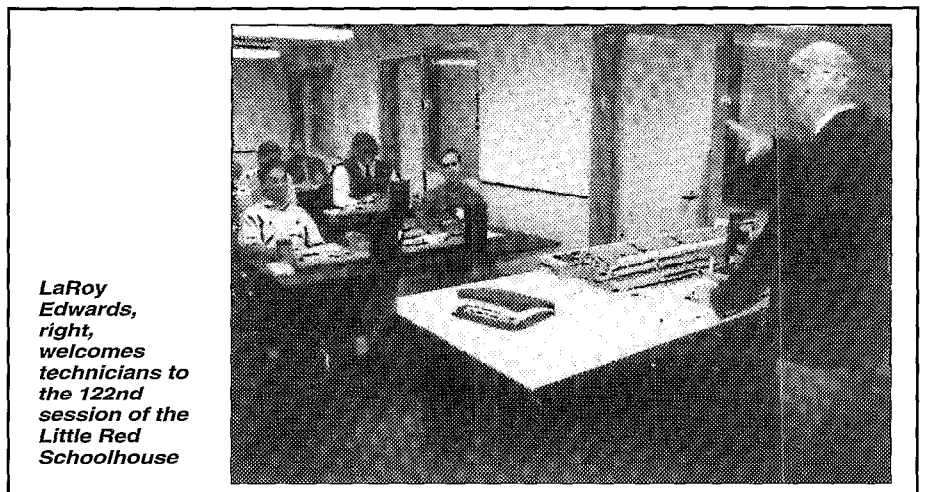
opportunity to hone their skills at the *Little Red Schoolhouse*—considered to be the most advanced piano tuning, regulation and voicing seminar available.

The *Little Red Schoolhouse* is one of the longest running technical courses of its kind, providing comprehensive instruction on grand piano regulation. Regulation is a process that ensures a piano is performing and sounding its best.

This week-long professional training seminar is conducted at Yamaha's national headquarters in Buena Park, California. During the program, technicians learn useful skills that are applicable in their daily work—no matter what brand they are servicing. At the 122nd session of the *Little Red Schoolhouse*—held February 5-9—six technicians from across the country participated in the intensive program.

Technician Sam Levite from Indianapolis, Indiana, looked to the seminar as an opportunity to increase his knowledge and improve the quality of his work. "I wanted to come here and refine my level of skill," Levite said. "The more I know about this instrument, the better off my customers will be down the road."

Technician Tom Young from Grand Rapids, Michigan, realizes that the program is valuable not only to himself, but also to his customers. "My clientele demands the knowledge this seminar offers," Young said. "Often, the better players play



LaRoy Edwards, right, welcomes technicians to the 122nd session of the Little Red Schoolhouse

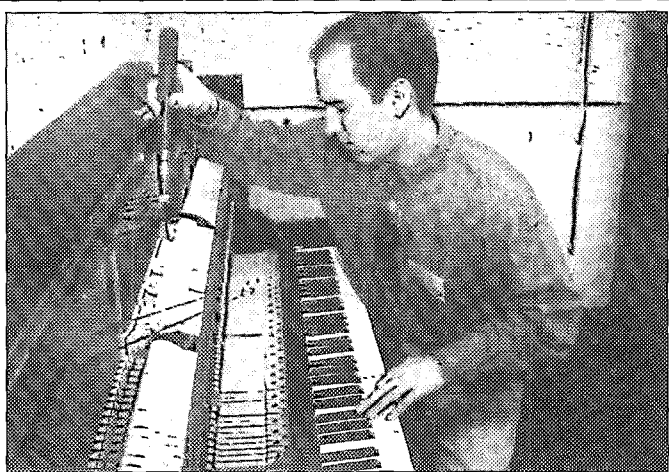
Disklavier™ and Silent Series™ pianos. Although there is very little difference between regulating these hybrid instruments and acoustic pianos, the training builds the technicians' confidence in servicing these pianos which make up a growing segment of the market.

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Little Red Schoolhouse

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The continuing development of the *Little Red Schoolhouse* program has allowed Yamaha to maintain a mutually beneficial, close relationship with its piano technicians throughout



Piano technician Matthew Doubt, service manager at Meridian Music in Indianapolis, tunes an upright at a Little Red Schoolhouse training seminar held in February in Buena Park.

the years. The technicians gain valuable knowledge about servicing all types of pianos and Yamaha knows that its dealers and customers are receiving the highest quality service available.



Piano technician Carey Crowson serves an upright Yamaha piano during a training session in February.

For more information on the Yamaha *Little Red Schoolhouse* piano technician professional training seminar, contact Bill Brandom at (714)522-9417.

Yamaha Corporation of America manufactures a complete line of musical instruments, professional audio products, customer-driven support products and computer-based products targeted to both the amateur and professional markets.

Industry News

Baldwin Names VP, Acoustic Pianos



Frank Seta

Baldwin Piano & Organ Company has recently appointed Frank Seta as Vice President, Acoustic Pianos. In this capacity, he manages the company's acoustic product lines marketed under the Baldwin, Chickering and Wurlitzer brand names. Seta has been with Baldwin Piano & Organ Company since 1979 and most recently served as Divisional

Vice President, Acoustic Pianos.

Selmer Offers Public Shares

Selmer Industries, Inc., a Delaware corporation, announced recently that the Company filed a registration statement with the Securities and Exchange Commission relating to the public offering of shares of its Ordinary Common stock with an aggregate offering price of \$75,000,000. The offering is being made through a syndicate of underwriters co-managed by Goldman, Sachs & Co. and Donaldson, Lufkin & Jenrette Securities Corporation.

Selmer Industries, through its subsidiaries Steinway Musical Properties, Inc. and The Selmer Company, Inc., is one of the worlds leading manufacturers of musical instruments. The Company (Selmer Industries, Inc.) intends to change its name to Steinway Musical Instruments, Inc., prior to the consummation of the offering.

A registration statement relating to the Ordinary Common Stock has been filed with the Securities and Exchange Commission, but has not yet become effective. The Ordinary Common Stock may not be sold, nor may offers to buy be accepted, prior to the time the registration statement becomes effective. This press release does not constitute an offer to sell or the solicitation of an offer to buy, nor shall there be an offer, solicitation or sale of the Ordinary Common Stock in any state in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of such state.

The Company intends to use the proceeds of the offering to repay existing indebtedness and for general corporate purposes.

1996 PTG Directory Corrections

	Status	Chapter	Region
BLACK ROBERT D. 508-824-3474 27 3RD STREET UNIT 4 TAUNTON, MA 02780	4	029	1
COHEN CHUCK 410-998-1131 13 HOLLY COURT OWINGA MILLS, MD 21117	1	212	2
EDWARDS WALT E. 619-698-8863 P. O. BOX 19862 SAN DIEGO, CA 92159	4	921	6
GITHENS MELBOURNE R. 541-247-6231 P. O. BOX 21 OPHIR, OR 97464	4	945	6
GREENBERG YEFIM 612-404-2482 15205 18TH AVENUE, N. PLYMOUTH, MN 55447	4	553	5
HERSHBERGER DOUG B. 310-596-1731 5024 KATELLA AVE., #166 LOS ALAMITOS, CA 90720	1	905	6
MIKESH MILT R. 319-234-1483 1959 KAMILLE COURT WATERLOO, IA 50701	1	501	5
PASCONE, ANTHONY 805-658-880 2180 JAMES AVENUE VENTURA, CA 93003	1	931	6
PHILLIPS JACK F. 802-247-4225 RR3, BOX 3011-1 BRANDON, VT 05733	1	054	1
PORTER THOMAS 708-599-1627 8125 S. NEWCASTLE BURBANK, IL 60495	1	601	4
SCOTT LINDA L. UNLISTED 7422 SW VIRGINIA AVENUE PORTLAND, OR 79219	1	787	3
STONE CAROLYN R. 510-581-1916 1075 PALISADE STREET HAYWARD, CA 94542	4	945	6

E-mail Addresses

FADER RORY H. DELTA, BC.	E-MAIL: rfader@dowco
HICKMAN FREDERIC EDGEWATER, MD.	E-MAIL: 73110.1520@compuserve.com
LITWIN DAN G. SAN DIEGO, CA.	E-MAIL: 71213.1421@compuserve.com
REMNEFF PETER E. TRUCKEE, CA.	E-MAIL: A1TUNER@aol.com
SEYMOUR EDWIN MCMINNVILLE, OR.	E-MAIL: pno2nr@pnn.com
STANWOOD DAVID C. VINEYARD HAVEN, MA.	E-MAIL: stanwood@tiac.net

CALENDAR of Events

July 17-21, 1996

PTG CONVENTION & TECHNICAL INSTITUTE
Hyatt Regency Dearborn, Dearborn, MI
Contact: PTG Home Office
3930 Washington, Kansas City, MO 64111
816-753-7747

October 3-6, 1996

NYSCON
Rochester South Holidome, Rochester, NY
Contact: Robert Edwardsen
716-586-1360
Rochester, NY

October 25-27, 1996

NORTH CAROLINA REGIONAL CONFERENCE
Sheraton Airport Hotel, Charlotte, NC
Conference Director:
James Baker, RPT (704) 366-8466
Registration Contact:
Lewis Spivey, RPT (919) 937-4777
15 Rachel Drive, Nashville, NC 27856

October 31 - November 3, 1996

TEXAS STATE ASSOCIATION CONVENTION
Inn on Lake Travis, Austin, TX
Contact: Mike Pope
512-869-4707

January 3-4, 1996

ARIZONA STATE SEMINAR
Tempe, Arizona
Contact: Rick Florence
119 W. San Angelo Ave, Gilbert, AZ 85234
602-926-4328

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 Home Office, your event will be listed through 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.

Associates Pass The Test

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MATTHEW C. MCWILLIAMS
312 CHERRY BLOSSOM LANE
GRETNA, LA 70056

CENTRAL EAST

543 NORTH CENTRAL WISCONSIN
MICHAEL L.O'BRIEN
P. O. BOX 526
FLORENCE, WI 54121

PACIFIC NW

830 IDAHO WEST
ERIC M. LEATHA
1407 S. ORIOLE WAY
BOISE, ID83709

191 PHILADELPHIA, PA

MICHAEL A. KIERAS
BOX 138
NEW LONDON, PA 19360

SOUTHEAST REGION

201 WASHINGTON, DC

JOHN M. BUTLER
13424 YORKTOWN DRIVE
BOWIE, MD 20715

212 BALTIMORE, MD

ARTHUR T. BURGE
18110 BILNEY DRIVE
OLNEY, MD 20832

301 ATLANTA, GA

JONATHAN W. EDWARDS
1750 BRIARWOOD ROAD, GG7
ATLANTA, GA 30329

320 DAYTONA BEACH, FL

MARVIN JOHNSON
1073 MINDELLO AVENUE
ST. AUGUSTINE, FL 32086

325 NORTHWEST FLORIDA

STEVEN W. LEHR
38 TANGLEWOOD CIRCLE
FT. WALTON BEACH, FL 32547

331 SOUTH FLORIDA

DAVID SCHMALL
8911 ESCONDIDO WAY E.
BOCA RATON, FL 33433

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722 ARKANSAS

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1610 E. LAKEVIEW
BENTON, AR 72015

752 DALLAS, TX

LOU G. TASCOTTI
2404 BROOKLAKE WEST
DENTON, TX 76207

763 TEXOMA, TX

ROBERT L. SANDERS
1608 NW 80
LAWTON, OK 73505

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110 HAGER DRIVE
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LAWRENCEBURG, KY 40342

454 DAYTON, OH

LAWRENCE D. PORTER
409 WINTER STREET
YELLOW SPRINGS, OH 45387

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4485 GRANTWOOD
KENTWOOD, MI 49508

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BYRON CENTER, MI 49315

537 MADISON, WI

ROZAN S. BROWN
26 CHEQUAMEGON BAY
MADISON, WI 53719

601 CHICAGO, IL

JOHN W. KEANE
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SOUTH BEND, IN 46617

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ROSELLE, IL 60172

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WILLMAR, MN 56201

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FRANK T. WOODSIDE
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NORTH VANCOUVER, BC V5Y 1R4

841 SALT LAKE CITY, UT

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350 W. MAPLE, #25
POCATELLO, ID 83201

972 PORTLAND, OR

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1085 16TH STREET NE
SALEM, OR 97301

New Members in May

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021 BOSTON, MA

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BOSTON, MA 02113

LEE S. KLEIN
359 MILE HILL ROAD
BOYLSTON, MA 01505

THOMAS F. MALENICH
26 DANIELS STREET, #3
SALEM, MA 01970

064 CONNECTICUT

DAVID S. KENDLE
25 FAIRY DELL ROAD
CLINTON, CT 06413

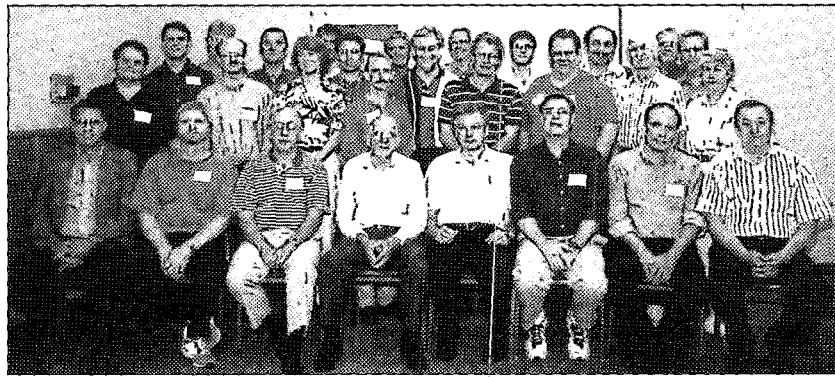
101 NEW YORK CITY

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JOHN N. KANAZAWICH
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BINGHAMTON, NY 13904

190 SOUTHEASTERN PENNSYLVANIA
RAYMOND C. GERNHARDT
155 FRANKLIN CORNER ROAD
LAWRENCEVILLE, NJ 08648



A Dallas "Associates Seminar" May 11-12 was an unqualified success, according to South Central Regional Vice President Jack Wyatt, RPT, who organized the event. Registration was limited to 25 Associates, and the seminar completely sold out. The seminar was designed as a pilot project for the South Central Region, Wyatt said, and the topics covered included vertical regulation, flange rebushing, hammer filing, tuning, grand regulation, key bushing, shank replacement, pedal repair and adjustment, customer relations and string replacement and repair.

Instructors and seminar participants included, front row from left, RPTs Leon Speir, Tom Tomko, Tom Seay, Gary Neie, Jim Geiger, Walt Connell, Robin Hufford and Jack Wyatt. Second row from left, Terry Fowler, Tim Partin, Cheryl Burton, Dave Conte, Leon Hiton, Arlis Hansford, Bill Douglas and Susie Geiger. Third row from left, Doug Garman, Nicholas Thompson, Robert Harper, Norbert Lesjack, Darrel Henschell, John Markham, David Kroenlein, Lloyd Immel, John Zenter and Gaynor Hutton.

PTGA Nominating Committee Report

The Piano Technicians Guild Auxiliary Nominating Committee has nominated the following members for 1996-1997 officer positions:

- President — Phyllis Tremper
- Vice President — Carolyn Sander
- Recording Secretary — Carol Bussell
- Corresponding Sec. — Beva Jean Wisenbaker
- Treasurer — Marilyn Raudenbush

LETTER TO THE EDITOR

To Whom It May Concern:

"He who throws dirt loses ground."

— An Unconcerned Involved Member of PTGA

BE CAREFUL

*Be Careful of your Thoughts
For your Thoughts become your Words.
Be careful of your Words
For your Words become your Actions.
Be careful of your Actions
For your Actions become your Habits.
Be careful of your Habits
For your Habits become your Character.
Be careful of your Character
For your Character becomes your Destiny.*
— Author Unknown

Perhaps you should read the above to your spouses ... for the future of both PTG and PTGA.

— An Unconcerned Involved Member of PTGA

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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.

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- Patron (\$100 or more)
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Hayward, WI 54843
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ED MORGAN

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AUXILIARY E X C H A N G E

Dedicated To Auxiliary News and Interests

A Forward Look Back

This will be the last article I write as your president. In just a few more days my tour of duty will come to an end. This experience over the last two years, was a lot to add to my already full life. Being your president has had both rewards and disappointments, mostly all rewards. I am glad that you have given me the opportunity to be your president. It took a leap of faith electing a male president for the first time. I hope you will consider the experience "mostly good," too. I also hope you consider a male again sometime in the future, if that person is the right person for the position.

The PTGA is in a period of adjusting to the current way of life most of us live today. Many of us live in households where both spouses work in a business — probably different businesses at that. Many of our households even have two professionals, each with their own professional organizations and colleagues to occupy our time. This has had a dramatic effect on this organization.

Several months ago I wrote in the *Journal* about an idea of how to restructure this group to better fit our current life styles. I suggested a dramatic change to our structure. Our PTGA could continue on a local level. We could also continue our scholarship effort. But, on the national level, the PTGA could become a far less "formal" organization. I suggested switching from the "formal" system of "Council and Board" to a "Committee" to arrange for our fun, tours and meals at the annual con-



L. Paul Cook
PTGA President

vention.

I think to have a "town hall" type meeting at the convention to pool our thoughts about what we would like to do the following year and to share what we have done at our individual local PTGA chapters the past year would be a good idea. We could continue our news letter and *Journal* entries, if there are stories to share from the various chapters. The response I received was very sparse, but positive toward this new way of organizing our group. Most who did respond to my proposed organizational change suggestion supported the idea.

Last year we formed a committee to study this organizational issue. The chairman is Julie Berry. It will be very interesting to see what they suggest.

In any event, I think we will see an overall change of our organizational structure on the national level. I think we are ready to shed the heavy burden of our formal system. Presently, we comprise a Council made up of Delegates and a formal "Board" with for-

mal "Officers," along with all the other baggage that goes with that type of structure. If you do elect to change the PTGA national structure, I will have been your last "president" as you will be electing our first National Committee and Chairperson instead.

However, we will still need volunteers to help with the things that need to be taken care of during the year. Please consider volunteering to help out. We will need someone to be on this new committee that lives near Orlando Fla., the site of next year's convention, should the committee idea be approved. You may volunteer even if you are not attending this year's convention, just let me know.

With the very unfortunate passing of Ginny Schwinn, our faithful Historian, we need a new "Historian." Someone to keep our old records and keep the photograph of past sessions together.

We also need an audit committee to review our treasurer's books at the convention. This is a one-event committee formed each year to review the books.

We may also need an editor or two, to help with the newsletter and *Journal* articles.

Lastly, we need someone to volunteer to install the new officers or new Committee members, as the case may be.

Well, pack your bags and be ready for a wonderful time of fellowship and fun. I sure hope to see each and every one of you at this year's annual convention in Dearborn, Mich. See you then.

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RELIABLE ACCU-TUNER NOTESWITCH! One year guarantee! Includes coiled cable, thumb switch and attaching hardware. Fits all tuning hammers. \$49.00 includes s/h. Dean Reyburn, RPT, Reyburn Piano Service; 2695 Indian Lakes Road, Cedar Springs, MI 49319, 616-696-0500

*Bluthner 6'4" 1910 Ebony, ornate plate w/clouds and angels \$7,500; *1917 Steinway A, 6'1" Mahogany, \$12,000; *Steinway 7'B, 1896, Ebony gloss, \$17,250; *Steinway 5'10" 0, Dark Mahogany, \$13,500; *Steinway 5'10" 0, 1920, Light Mahogany, \$16,000; *Steinway D, 9', 1899, Ebony, \$28,900; *Steinway B, 1945, \$25,000, Ebony Gloss; *Steinway B, 1895 Ebony Satin, \$30,000; *Mason & Hamlin 5'8" A, 1916, Brown Mahogany w/Piano Disc, \$12,000; *Baldwin 7', Ebony gloss w/Pianocorder, \$14,000; *Mason & Hamlin 5'8" 1926 "A" Brown Mahogany, \$4,500; *Fisher Bby Grand, 5'4" 1915 Circasian Walnut, \$4,895; *Kawai Walnut 5', 1972 \$6,800. Call SCHROEDER'S PIANOS for a complete list of used pianos, 800-923-2311.

VICTOR BUYS & SELLS FINE GRAND PIANOS. LARGEST selection in USA, Over 400. Need Tuner/Technician. VICTOR PIANOS, 300 NW 54 St, Miami, FLA 33127, 305-751-7502.

PIANOS - Yamaha and Kawai grands \$1850 and up. 23 Steinway grands and verticals. Large quantity of used American grands from \$700 up. We buy pianos. Ed's 504-542-7090.

New from PROTEK: *ProLube* Spray Lubricant. Protek *ProLube* is an advanced state polymer lubricant. Designed around the successful CLP formula, *ProLube* is for higher friction areas like the keyed and frame, shift and sostenuto mechanisms. Great for front and balance rail keypins and anywhere you would use a spray lubricant. Provides long lasting durable lubrication with virtually NO ODOR! With the addition of *ProLube* along with CLP and MPL-1, Protek offers safe, high tech task specific tools for every lubricating need. Ask for *ProLube* at the supply house you do business with.

REPAIR CHIPPED IVORY IN 20 MINUTES. "AcryliKey" ivory restoration system produces a strong, color-matched, nearly invisible repair. Kit contains material enough for 50+ repairs plus pigments, mixing utensils, sanding pads, and complete instructions. \$39.95 ppd. Richard Wagner, RPT; 7709 S.W. Pfaffle, #40; Tigard, OR 97223; 503-624-7360.

HELP WANTED

TUNING AND TECHNICAL position(s) available immediately in warm, sunny El Paso, Texas. Large, well-equipped shop for rebuilding and refinishing. Stock and rental pianos need regular tuning and maintenance. Plenty of outside tuning and repair work. Great benefits package includes 401(k). Car allowance, Super working conditions. Compensation negotiable.

Send resume to:

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Kurland-Salzman Music @
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El Paso, Texas 79904.

SERVICES

STRAIGHT SIDES, SQUARE FRONTS and crisp notches are the benchmarks of our quality key recovering. Tops with fronts \$115 plus return shipping and insurance. Call or write for free price list of our key restoration services. Yvonne Ashmore, RPT and Associates, 12700 La Barr Meadows Road, Grass Valley, CA 95949, 916-273-8800

KEYBUSHING: We use over 20 different sizes of Spurlock Precision Cauls. Send the micrometer measurement of the key pins and we will give you a perfect fit. Both rails high quality felt \$85.00 or leather \$95.00 plus return shipping and insurance. Write or call for free price list of our key restoration services. Yvonne Ashmore, RPT and Associates, 12700 La Barr Meadows Road, Grass Valley, CA 95949, 916-273-8800

ADD ADDITIONAL \$'s to your income. Rebuild player pianos for your clients. Send us the player parts. You restore the piano and we will return the mechanism in restored condition. We guarantee our work. For more details, call or write: Jim Brady, 2725 East 56th Street, Indianapolis, IN 46220, 317-259-4307

SOUNDBOARDS INSTALLED, topsides rebuilt. Bridge-conformed, scale-diaphragmized boards with truly quartersawn ribs (sitka, eastern, or sugar pine). You send us the case, we'll return you a piano. Quality's the bottom line. David G. Hughes, RPT. 410-429-5060. Baltimore.

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.095 Premium Tops with Fronts - \$125.00
High Gloss Sharps (3 1/2") - \$50.00
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Custom Keys Made - Call for Price
Many other services available. Call or write for price list. FREE return freight on pre-paid orders of \$75.00.
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1-800-745-6819.

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REFINISH PIANO HARDWARE in nickel, brass, or chrome. Metal finishing specialists for over thirty years. Parts shipped back to you in 2-3 weeks. Rush jobs can be accommodated. Whitman Company, Inc. 356 South Ave., Whitman, MA 02382. Ph. 1-800-783-2433.

I WILL RESCALE your next restringing project. Lower inharmonicity, increase power, make voicing easier. \$40. For measurement requirements call Paul McMillin, RPT. (800) 820-9014.

SENECA PIANO KEY. Quality key services at competitive prices. Sharps replaced, keybushing and the finest key recovering at any price. Write or call for price list and information on quick return of your key work. Seneca Piano Key, Ted Oberhaus, 4977 Frontenac Road, Trumansburg, NY 14886; 607-387-3095

RESTORATION OF CARVED WORK, turnings, inlays, and marquetry, including repair of existing work and reproduction of missing pieces. Edwin Teale; 18920 Bridgeport Road; Dallas, OR 97338; 503-787-1004.

TRAINING

BROOKS, LTD. SHOWCASE CLASS: Given by Wally Brooks and Company. Saturday, July 20th. 1:30 p.m. — PTG NATIONAL CONVENTION, DEARBORN.

WELL-TEMPERED TUTOR. Learn to tune by ear with your Macintosh computer. Use pre-programmed temperaments or create your own. If you have trouble hearing beats, this program can isolate the beats for you. Score yourself with the PTG exam. Twenty-one historical temperaments also available. Demo disk available. Mark Anderson, RPT: 510-524-0390 (California). Great teaching tool!

THE NORTH CAROLINA REGIONAL CONFERENCE—October 25-27, 1996 offers 2 1/2 days of comprehensive classes from basic to advanced subjects taught by PTG's leading instructors. For registration information contact: Lewis Spivey, RPT, 15 Rachel Drive, Nashville, NC 27856 (919) 937-4777.

NILES BRYANT OFFERS TWO HOME STUDY COURSES: Electronic Organ Servicing: Newly revised. Covers all makes and models — digital, analogue, LCT's, synthesizers, etc. Piano Technology: Tuning, regulating, repairing. Our 87th year! Free booklet; Write or call NILES BRYANT SCHOOL, Dept. G, Box 19700; Sacramento, CA 95819 — (916) 454-4748 (24 hrs.)

BILL GARLICK SEMINARS—Upgrade your skills at intensive six day resident seminars at Bill's home. Applications are invited for upcoming seminars in tuning, grand action regulation, historic tunings, harpsichord maintenance. Tuition includes instruction and use of facilities, private bedroom (share baths), breakfast and lunch. Write or call for information. Bill Garlick, RPT, 53 Weeks St., Blue Point, NY 11715; 516-363-7364.

THE RANDY POTTER SCHOOL OF PIANO TECHNOLOGY— Home Study programs for beginning students, associate members studying to upgrade to Registered Piano Technician, and RPT's wanting to continue their education. Tuning, repairing, regulating, voicing, apprentice training, business practices. Top instructors and materials. Call or write for information: RANDY POTTER, RPT; 61592 ORION DRIVE; BEND, OR 97702; 541-382-5411. See our ad on page 3.

VIDEOS



INSTRUCTIONAL VIDEO TAPES. Victor A. Benvenuto. Piano tuning, \$50.00*; Grand Regulating, \$50.00*; Grand Rebuilding, \$100.00 (2)*; Key Making, \$50.00*; Soundboard Replacement, \$29.95*. (*Plus S/H). The Piano Shoppe, Inc., 6825 Germantown Avenue, Philadelphia, PA 19119-2113; Ph. 215-438-7038, Fax, 215-848-7426

SUPERIOR INSTRUCTIONAL TAPES
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PIANO TECHNOLOGY EDUCATIONAL MATERIALS. \$49.95 each reel— Vertical Piano Regulation, presented by Doug Neal. Presented by Cliff Geers: Plate & Pinblock Installation Part I, Plate & Pinblock Installation Part II, Wood Repairs, Soundboard Repair, and Grand Hammer Replacement. Add \$5 per order for shipping and handling. Questions? Call 712-277-2187. Mail orders to PTEM, 3133 Summit, Sioux City, IA 51104.

WANTED



WANTED!! DEAD OR ALIVE: "Steinway uprights and grands." Call collect, Ben Knauer, 818-343-7744.

PIANOS! PIANOS! PIANOS! !!!Free phone appraisal!!! Buying all types of usable pianos. Cash or bank check on pick up. Won't hesitate on price. Call us first for fast professional service. "Steinway, Mason-Hamlin command specialty prices." Jay-Mart Wholesale, P.O. Box 21148, Cleveland, OH 44121. Call Irv Jacoby collect 216-382-7600/FAX 216-382-3249.

NEEDED — Two-Headed Tuning Tool for Square Grand Piano. Contact John Kinder, 3206 Hampton Place, Middletown, Ohio 45042. (513)422-4543.

WANTED TO BUY— Piano Tuning Business servicing Hampshire & Franklin Counties of Massachusetts and/or surrounding areas. B. Snook, RPT. 415-586-5656.


WANTED: TINY PIANOS such as the Wurlitzer Student Butterfly or other small types. Call collect: Doug Taylor, 607-895-6278. I'll pay shipping!

JAY-MART WHOLESALERS — !!!Free phone appraisal!!! Buying all types of usable pianos. Cash or bank check on pick up. Won't hesitate on price. Call us first for fast professional service. "Steinway, Mason-Hamlin command specialty prices." Jay-Mart Wholesale, P.O. Box 21148, Cleveland, OH 44121. Call Irv Jacoby collect 216-382-7600 / FAX 216-382-3249.

HELP! SEND A PIANA TO HAVANA: There are about 40 technician-tuners living and trying to work in Cuba, but they have been cut-off from piano supplies, tools, and expert training for 37 years. Can you help? See our booth at Dearborn or call Ben Treuhaft, 510-843-3823 / Tom Lloyd, 809-775-1405.

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SUNY POTSDAM

PIANO TECHNICIAN

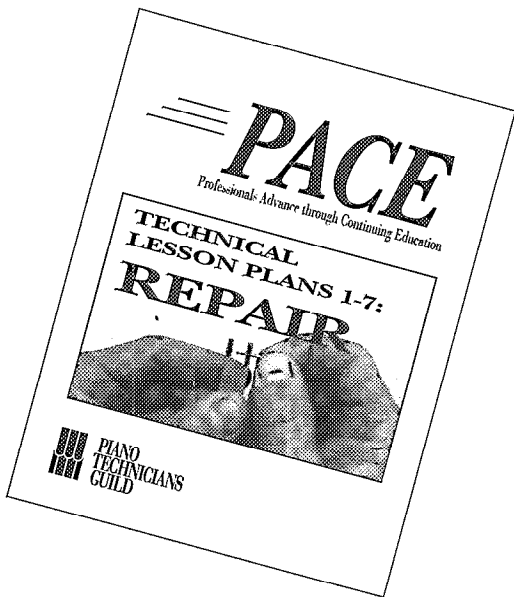
The State University of New York College at Potsdam invites applications for the position of Piano Technician. Long recognized as one of the leading public colleges in the United States, SUNY Potsdam preserves a tradition of excellence in the liberal arts, music and teacher education. The College fosters a student-centered environment through efforts in program development that encourage faculty/student research and innovative pedagogy. The College is distinguished not only by its commitments to teaching and the liberal arts, but also by its unique natural, cultural, and recreational environment. Led by the internationally recognized Crane School of Music, it has long been a center of excellence for music and the arts.

Description of duties: Implement and manage all aspects of stringed keyboard technology at The Crane School of Music, a school of 500 students and 45 faculty. Responsibilities include: piano and harpsichord maintenance, concert preparation, inventory control and instruction in piano technology. Working directly with a diverse community of faculty, staff, students and guest artists, the technician is responsible for the tuning, voicing, repairing, regulating and rebuilding of all Crane keyboards, including 30 Steinway grands, 20 Mason and Hamlin grands, 100 Steinway uprights, 5 Steinway "D" grands, 3 harpsichords and 1 fortepiano; plan and manage budget and resource requests and allocations, identify and work with contractors and supervise tuners and student assistants. Opportunity to evolve a piano technology program and/or a regional repair facility.

Qualifications: Bachelor's degree and/or certification from accredited Piano Technology program and at least 5 years experience as a technician with concert experience required. Appropriate length of experience in lieu of degree/certificate will be considered.

Send a letter of application, resume and phone numbers of three references to: Chair, Piano Technician Search Committee, SUNY Potsdam, Potsdam, New York, 13676. To receive full consideration, applications should be received by July 1, 1996.

State University of New York at Potsdam is an equal opportunity affirmative action employer committed to excellence through diversity.



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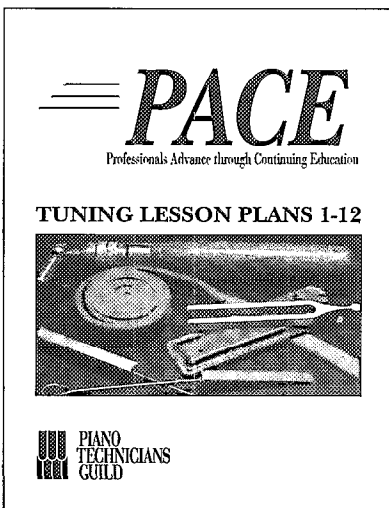
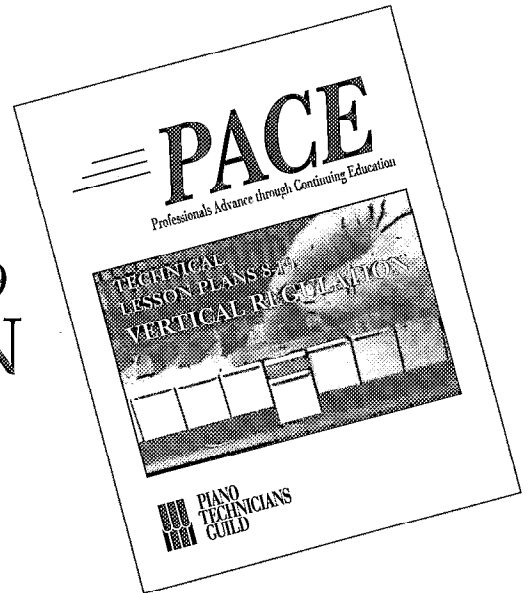
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TUNING

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- KEYS — Key Repairs, Key Bushing, Key Making, Ivory Work, Plastics

PACE Lesson Plan books and Reprint Kits are all available for \$15 each, plus shipping and handling from the Piano Technicians Guild Home Office, 3930 Washington, Kansas City, Mo. 64111. Or by phoning (816) 753-7747, or fax (816) 531-0070.

PianoDiscTM

July 1996

News From The World of PianoDisc



Summer NAMM

Floyd Cramer set to preview gospel disk in PianoDisc's booth

Country music's most honored instrumentalist, legendary keyboard great Floyd Cramer, will make a special Summer NAMM Show appearance in MSR/PianoDisc's booth #218 in Nashville. Attendees at the show, which runs from July 12-14, will have the chance to meet Mr. Cramer and listen to a preview of his latest recordings for the PianoDisc system: gospel favorites played in his inimitable style.

"Floyd is that rare musician whose style is unmistakable and who has had a profound influence on so many pianists. Just stand next to him at a NAMM Show and you hear the same thing said over and over: 'You are the reason I play the piano. I've loved your music for as long as I can remember.' Most will also confess to copying that famous note-slurring style," commented MSR/PianoDisc President Gary Burgett. "It's always an honor and a pleasure to have Floyd appear at NAMM with us."

Mr. Cramer's appearance is scheduled for Saturday, July 13th, from 2 to 4 p.m.

GT-360 QuietTime offers more than just a little peace and quiet

Chances are you've heard of MSR's new piano mute system, the **GT-360 QuietTime**. But if you think it's only a way to silence a piano while you play, you only know one-fourth of the story. The amazing GT-360 QuietTime is the only mute rail system on the market that can make an ordinary acoustic piano become **four products-in-one**: an acoustic piano; an electronic keyboard; a MIDI controller; and a QuietTime piano. And it's also the **only product of its kind available as a retrofit**.

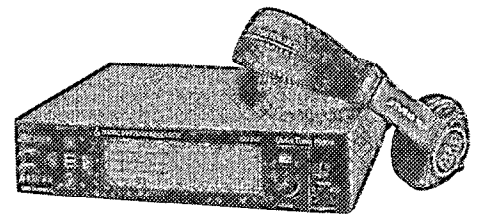
The ability to mute a piano 100 percent, at will, makes the GT-360 attractive to consumers, but it's the extras that convince them to buy it over the competition. To start with, it has a General MIDI tone generator which provides 128 different instrument sounds and allows up to 32 note polyphony, layering of up to 16 of the different sounds per note, and factory, demo and user presets. It also offers fun features that were previously reserved for keyboard owners: like Reverb, Chorus, Pan Effects, and Keyboard Split.

The control unit also has MIDI In, MIDI Out and MIDI Thru ports. Using the MIDI

Out port allows the GT-360 to work as a MIDI controller, making the piano compatible with all other MIDI devices.

"There is virtually no competition for the GT-360 QuietTime. It has so many more features to offer than anything else out there," commented MSR Executive Vice President Tom Lagomarsino. "And as a retrofit, it can be added to anybody's piano. And the best part is that the pianist doesn't have to give up the touch and tone of the acoustic piano to enjoy all the benefits of a keyboard. GT-360 really gives them the best of both worlds."

Check out the GT-360 QuietTime at Summer NAMM, July 12-14 in Nashville, in the MSR/PianoDisc booth #218.



Are you making enough money?

If the answer is "no" you should make an important call today. **Dial 1-800-566-DISC**, to find out how America's most exciting new music product, the **GT-360 QuietTime** and its best selling player piano system, **PianoDisc**, can boost your sales significantly.

Hundreds of dealers and technicians across the United States and in 30 countries around the world know first hand how much impact MSR products can make on their profitability.

The key to making it all happen is to call and schedule training at one of MSR's upcoming installation training sessions. **If learning new skills to make more money appeals to you, make the call today.**

TRAINING SCHEDULE

- August 19-24
- September 23-28
- October 21-26

CONTINUING EDUCATION

- August 26-28
- Sept. 30-Oct. 2
- October 28-30

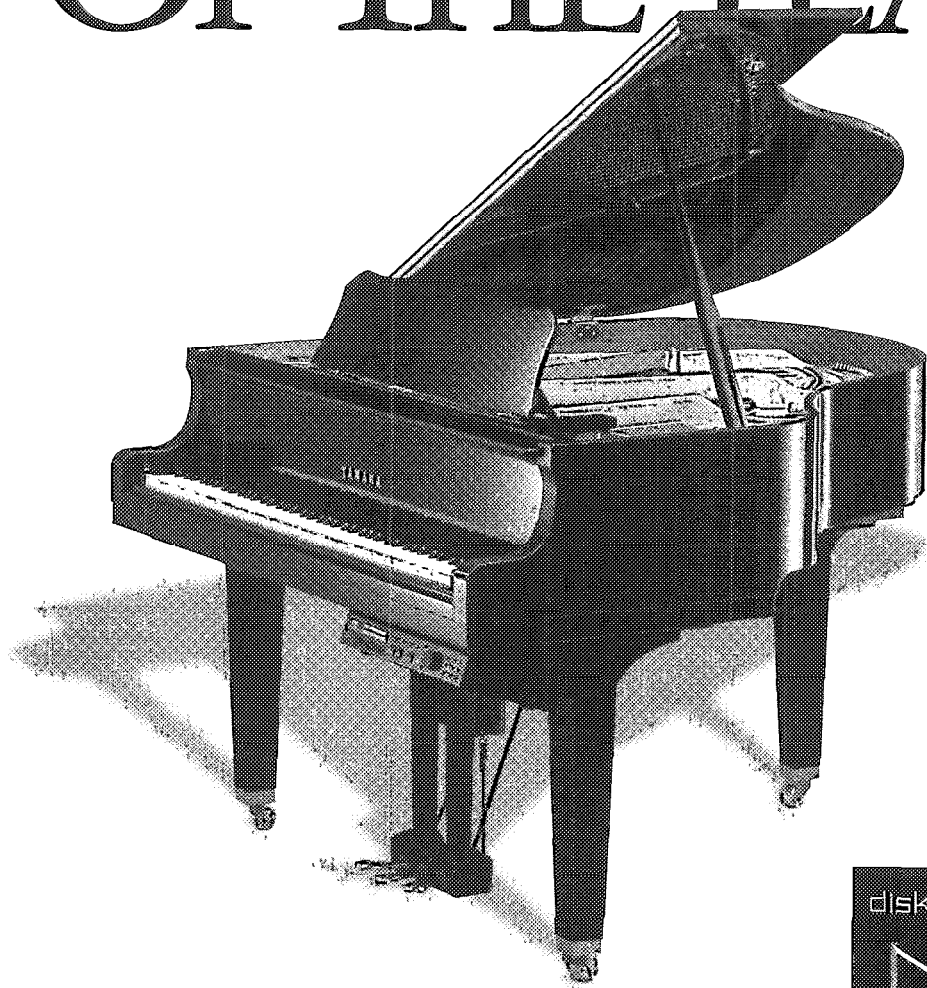
MSR/PianoDisc

4111 North Freeway Blvd.
Sacramento, CA 95834

Phone: (916) 567-9999 • Fax: (916) 567-1941
Tech Support: (619) 258-1460 or (916) 567-9999

Tuition for the installation and Continuing Education seminars is free, but a \$50.00 refundable deposit is required for confirmation. The PianoDisc Continuing Education Series seminars are restricted to PianoDisc certified technicians in good standing. For more information about attending a PianoDisc Installation Training seminar or a Continuing Education seminar, call PianoDisc during our office hours.

1994 KEYBOARD PRODUCT OF THE YEAR



Dealers have chosen the Yamaha Disklavier Piano as "Keyboard Product of the Year." It just goes to show that great craftsmanship, great technology, great dealers and great salespeople can make things happen.

