PIANO TECHNICIANS

Journal

December 1991

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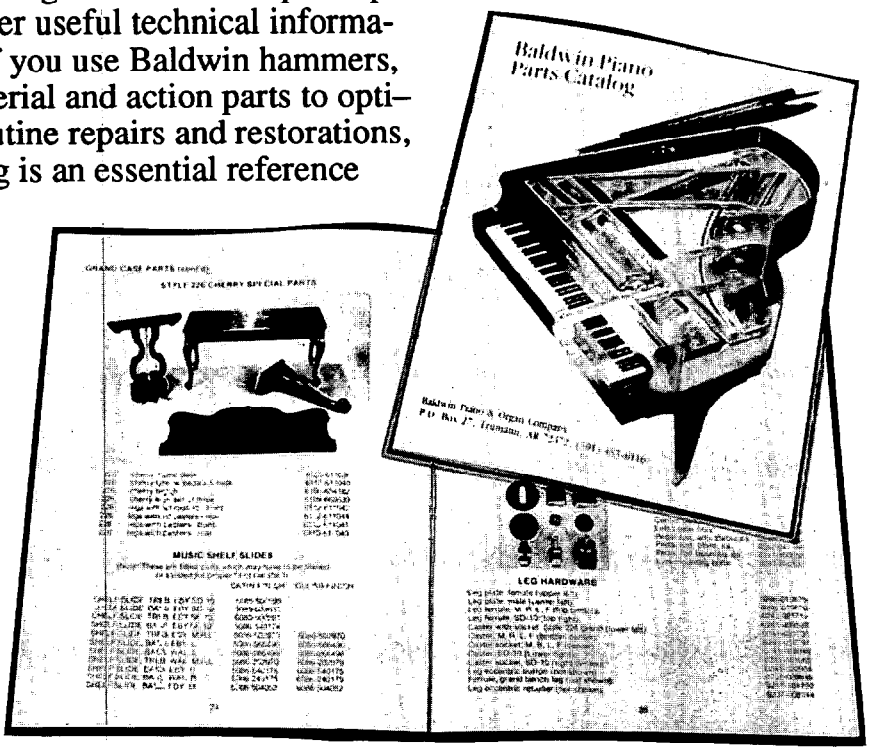

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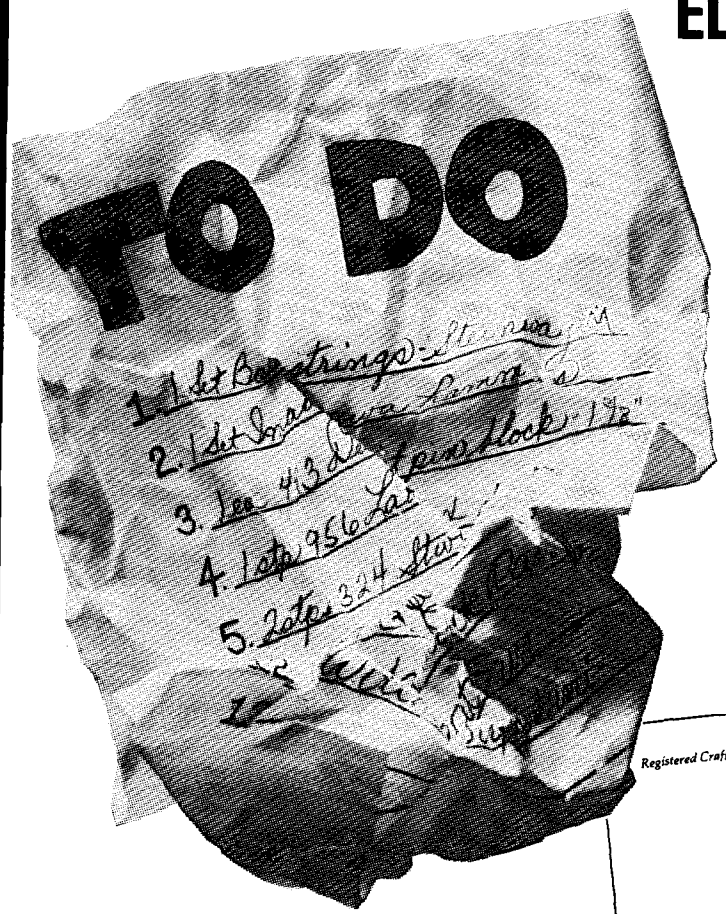

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PIANO TECHNICIANS
Journal

DECEMBER 1991 — VOLUME 34, NUMBER 12 OFFICIAL PUBLICATION OF THE PIANO TECHNICIANS GUILD, INC.

ABOUT THE COVER:

The fine instrument gracing this month's cover is your editor's personal "Baby Grand Piano." It was presented by friends as a novelty birthday gift back in college days. This is the only "grand" piano he's ever owned, and one which has truly not been tuned since it left the factory.

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The Piano Technicians Journal (ISSN 0031 9562) is the official publication of The Piano Technicians Guild, Inc., 4510 Belleview, Suite 100, Kansas City, MO 64111. The *Journal* is published monthly. Second class postage paid at Kansas City, MO., US ISSN 0031 9562 foreign and domestic. POSTMASTER: please send address changes to: *Piano Technicians Journal*, 4510 Belleview, Suite 100, Kansas City, MO 64111.

Annual subscription price: $85 (US) for one year; $155 (US) for two years; $7.50 (US) per single copy. Piano Technicians Guild members receive the *Piano Technicians Journal* for $45 per year as part of their membership dues.

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Randy Potter School Purchases Aubrey Willis

As you may be aware, the Aubrey Willis School of Piano Tuning and Repairing ceased to exist September 21, 1990, when Career One, of Phoenix, Arizona, a licensee, went out of business.

Owners of the course Dave and Rose (Willis) Pennington asked us to consider taking over the license, to offer to "teach out" to stranded Aubrey Willis students, and to allow former Aubrey Willis students to transfer into our school as Continuing Education students. Many already have.

David Pennington, RTT, former President and Director of Instruction at Aubrey Willis, said "It was the best course in its day, but it has needed rewriting and updating for many years. When the Randy Potter course was published (in 1987) it was more complete and up-to-date than anything even my father-in-law had conceived of. They have become the industry leader in teaching piano technology. I have been recommending Randy's course for some time." Pennington, was trained by Aubrey Willis and is married to his daughter, Rose.

For more information, see the related News Release in the July 1991 Industry News section of the *Piano Technicians Journal.*

See us at the Arizona State Seminar, Tuscon, January 3-4, 1992; the California State Convention in Ontario, CA, February 21-23, 1992; and the Pacific Northwest Regional in Banff, AB, Canada, April 2-4, 1992.

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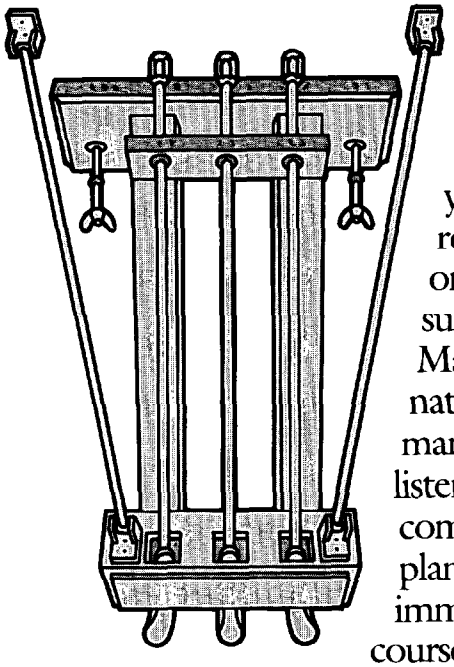
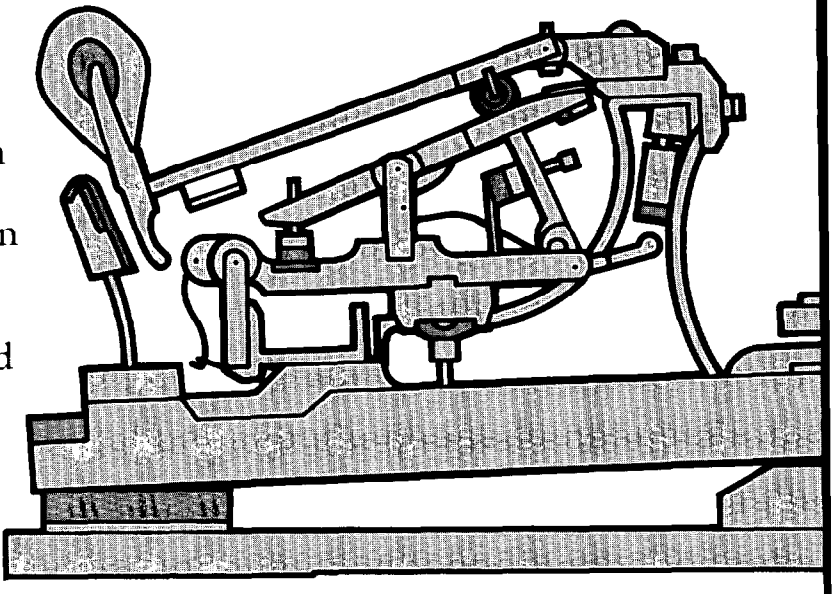
How we to silence

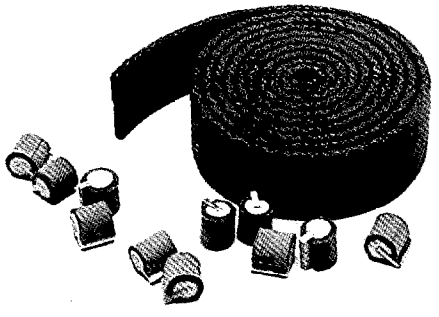




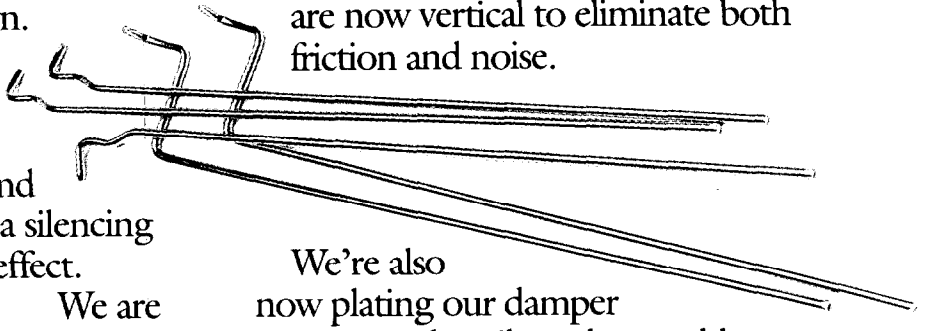
Several of you have recently written or phoned with suggestions. Don Mannino, our national service manager, read and listened to your comments and planned an immediate course of action.

Some of you have suggested that we lessen the amount of mechanical noise in our pianos. With the help of your suggestions, we've come up with a number of ways to quiet our pianos down.

For starters, we've changed the knuckle core felt, whippen heel cloth and keyboard rail cloth in our grand actions to softer materials for a silencing effect.



We are now fastening our grand pedals to the pedal box bottom instead of using nylon dowels in the box sides. And the grand pedal rods that previously had been angled in slightly are now vertical to eliminate both friction and noise.

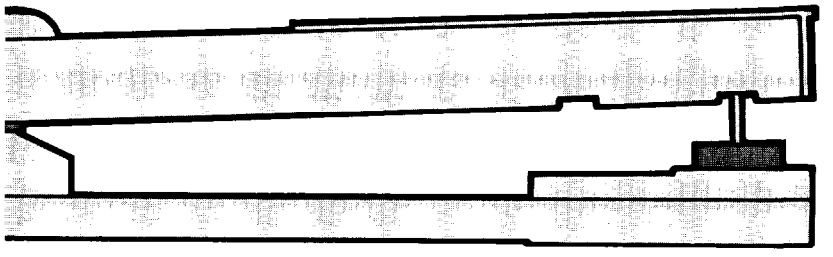


We're also now plating our damper wires more heavily and smoothly to decrease wear and corrosion as well as reduce noise where they pass through the guide rail.

In addition to diminishing noise, we've

are plotting our critics.

also lightened our touch through the repositioning of jack tenders and letoff buttons, and the use of auxiliary whippen springs in selected models. In response to your comments and suggestions about our action, we've now introduced a lighter



weigh off standard, as well.

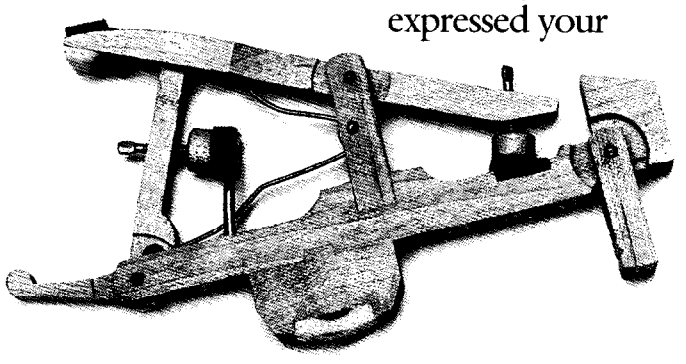
We're also excited to have discovered a truly remarkable grade of English bushing cloth for our action centers and keys. Its superior properties will dramatically increase action longevity as well as create a noticeably smoother touch.

On his latest trip to the factory, Don expressed your concerns to our manufacturing department heads and production engineers. Within six days,

they began implementing improvements and refinements. And within a week, many of these were already in use in our pianos.

Striving to build a perfect piano is not an easy task. It's a challenge we eagerly face each day. But we're getting there thanks to all of you — our not so silent partners.

To share your comments and suggestions on how we can continue to improve our pianos together, please write us at Young Chang America, Inc., 13336 Alondra Boulevard, Cerritos, CA 90701, or call us at (213) 926-3200.



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PRESIDENT'S MESSAGE

As Time Passes...

Nolan P. Zeringue, RTT
President

The first year in our new decade has already passed. It seems only a couple of weeks ago that we were starting out in the year and things were getting tense in the Middle East. The years seem to pass so much faster as we get older. I have never thought to ask some younger person still in school if they think that time is passing faster for them also.

Maybe there is a comparison which can be drawn with our daily lives and the PTG Convention. We have discussed many times that when we plan the PTG Convention, we plan for something to be happening almost every minute of the time we are there. Maybe our lives today are so filled with things to do time just flies by on a never-ending schedule.

If you can this holiday season, take some time to relax and take some time to smell the roses. Once they put us in that box all the things which seem so important and all the things which we absolutely have to do now won't make any difference anyway.

This past year has been very rewarding for me in PTG, and I deeply appreciate the honor of being able to serve you as president of PTG. I hope the year was also a very good one for you. I wish all of you a very happy holiday season, a safe holiday season, an a new year which will bring you health and prosperity.

I thank all of you who have given assistance to me so that I might have been able to accomplish the duties of this office, many members of PTG, the Home Office Staff, the PTG Board, especially Fern Henry and Sharla Kistler. I appreciate all of your help.

A sincere Happy Holidays and Happy New Year.

INDUSTRY NEWS

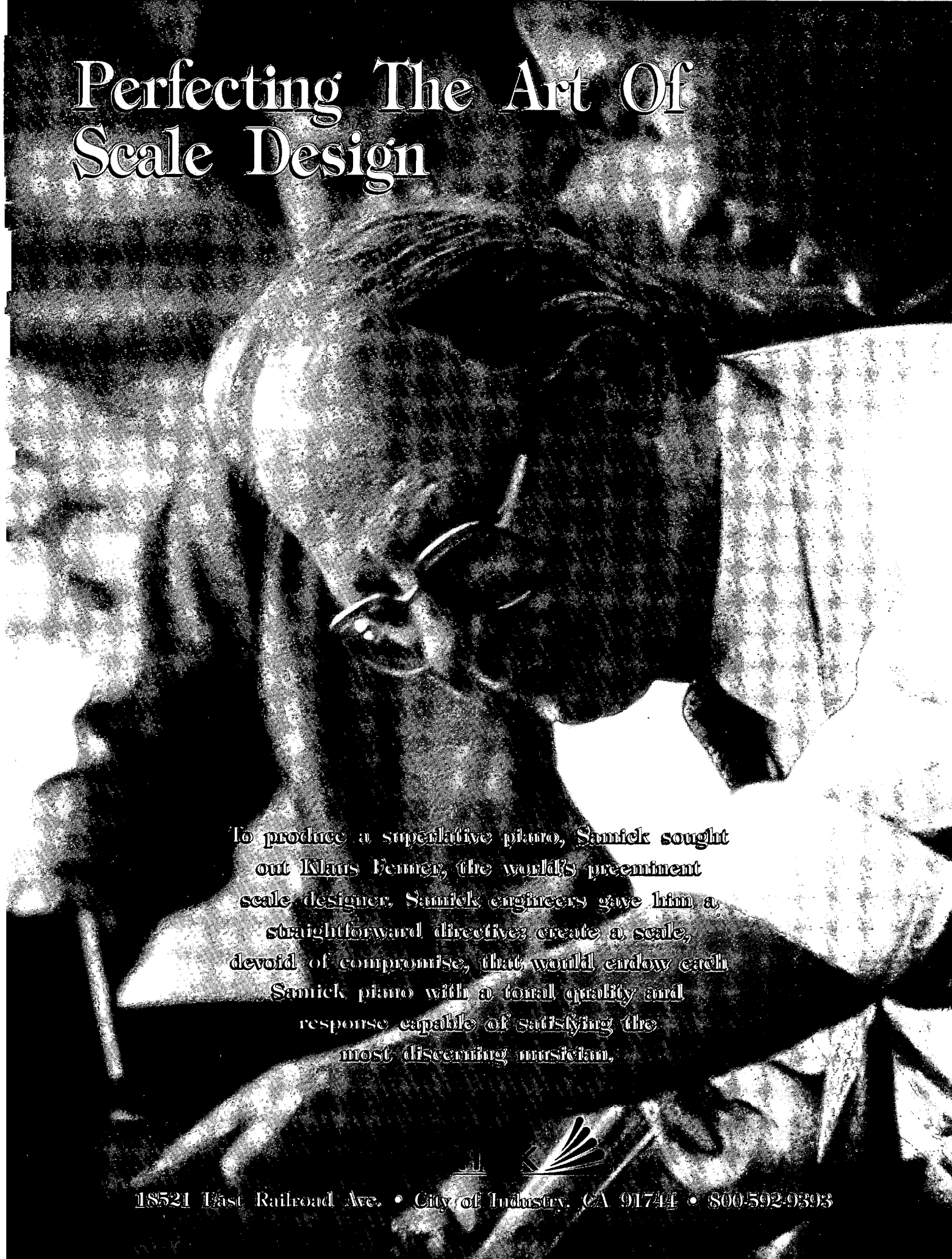
1992 Purchaser's Guide
To The Music Industries Now Available

Used by thousands of technicians, dealers, distributors and manufacturers worldwide, the 95th Annual Edition of "The Purchaser's Guide To The Music Industries" is now available from *Music Trades* magazine.

In addition to nearly 4,000 music supplier listings with complete profiles for each company, the current Purchaser's Guide contains a more comprehensive directory of industry trademarks to permit you to locate the companies that manufacture brand-name products and parts. (Nearly 5,000 trademarks are listed).

Other major improvements include nearly 3,000 toll-free and fax numbers, an almanac of important industry sales statistics plus a five-year calendar of important music industry events.

To get your copy of the 1992 Purchaser's Guide (over 400 pages), which comes free with an annual subscription to the monthly *Music Trades* magazine for only $12, ($18 outside U.S.), write to: *Music Trades* magazine; P.O. Box 432; Englewood, NJ 07630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FROM THE HOME OFFICE

A Miracle — Just When We Need It

Larry Goldsmith
Executive Director

The holidays always seem to come along just in the nick of time.

These are troubled times for everyone — crises foreign and domestic, a recession that shows few signs of abating, and a continued dehumanization and erosion of mutual respect for our fellow beings.

As we head into winter, the pace of our lives seems to pick up. There's more to do, less time to do it, and the onset of winter's gloom seems to amplify the depression we feel.

When the catalogs begin to arrive, and the Halloween decorations are replaced with Christmas sale signs, the pressure mounts. This year it seems to be worse. With desperation in their voices, retailers are announcing that the economy is our responsibility — if we don't get out there and spend, spend, spend, our whole economic structure will shrivel up and collapse.

Unless you're locked in a closet, it's almost impossible not to get depressed about this stuff. Every morning's newspaper brings another dose of bad news. Even if you're not doing too bad yourself, it seems like simple good manners to be pessimistic about your continued good fortune. Depression isn't wasted. Even if we're not in bad shape, somebody, somewhere is having a bummer and the evening news will be sure to tell us about it.

But somewhere in all this, there's a miracle lurking. I'm not going to try to tell you that the economy is going to turn around, that we'll find a cure for AIDS, or that we're going to find answers to the pressing moral questions we all face. A miracle won't help there anyway. Those matters can only be resolved by strength of will, cooperation and hard work.

No, the miracle I'm talking about is inside ourselves. It comes when we put aside the mundane and open ourselves to the true spirit of the holidays. It comes when we stop letting that surly salesclerk bother us and focus on the pleasure our present will give its recipient. It comes when we stop dwelling on all the irritating things other people do to us and start thinking about how much we're all alike. It comes when we do something for someone else without thought of reward, brownie points or tax deductions. It comes when we realize how much we treasure our loved ones, and why. It comes when we reach out to each other, when we put all our troubles aside and open up to the spiritual peace we crave.

Sometimes it's hard, but the miracle always seems to come, and just when we really need it. In this holiday season, I wish for you that miracle. What's more, I hope it lasts all the coming year. ≡

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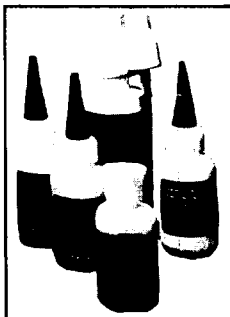

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INTERNATIONAL RELATIONS

The Piano Technicians' World Gets Smaller

Ronald Berry, RTT
Indianapolis Chapter

At last summer's convention I received a copy of the following letter from the Russian Association of Piano Makers.

Dear Friends,

The Soviet Association of Piano Makers asks for your cooperation. We would like to share our experience and specialist knowledge of tuning, modulating, repairing, and restoring; and would appreciate opportunities to become better acquainted with your methods.

We would be more than grateful for any suggestions that might lead to mutual cooperation.

We look forward to hearing from you at 14/2 Herzen Street; Moscow 103009; telephone 229-8204

Yours faithfully,

R. Kerer, President of the Association of Piano Makers, People's Artist of the Russian Federation, professor

I sent him a letter telling him about IAPBT and its activities, especially that we will be meeting in France in 1993 and received the following reply.

Yesterday I received your letter and sincerely thank you for it. Your letter was a big moral support to us and we are surely glad to join your association and contribute to your worldwide community of masters, producers, technicians.

Certainly today our association is in need of much help, but we feel that the situation will change in the near future and we will be on a par with the rest of the civilized world.

We have had help from those whom Professor Kerer has worked with at the Venskoy Conservatory and I am taking his place there.

I will soon send you the regulations of our association and some materials about our activities.

Best wishes,

B.K. Chastnich, Vice President, Russian Association of Piano Makers (Assotsiatsya Fortepiannich Masterov)

It is wonderfully exciting to see the world of piano technicians growing smaller. Who would have guessed that we would be in contact with a Russian association?

This month I am including the speech given by Mikio Sakurai, President of the Japanese Piano Technicians Association, at the seventh IAPBT convention in Seoul, Korea. The topic each speaker was to address was, "The Future Of Pianos And Piano Technicians."

My sincere congratulations for having the seventh IAPBT Symposium in Seoul. I would like to express my deep gratitude to Mr. Suck, Chairman, Korean Association of Piano Technicians, and Vice Chairman, IAPBT. Also I am very much pleased by the presence of many chairmen and other members who have traveled a great distance with due consideration of the significance of the symposium.

During the last two years, the international situation was so complex and we have witnessed some fortunate as well as some unfortunate incidents. We as technicians working for pianos fervently aspire peace in the world.

It is our hope that our strong ties of friendship transcending the barriers of boundaries would further promote musical culture and contribute toward realizing lasting peace in the world to a certain extent.

As of March 31, 1991, we have 2,740 piano technicians who are members of JPTA. There are an estimated 7000 to 8000 total piano technicians.

The estimated number of pianos distributed is 700 million, with a 20% rate of distribution.

Mobile technicians service about 500 to 600 per person. Monthly piano relocation is about 40 to 60 per person. The average working time per case is 1.5 to two hours (add business consultation of an average half an hour).

Individual promotional activities include suggesting scheduled (regular) tunings, and utilization of an occupational telephone network, and referral communication.

Association promotional activities include advertisement through musical magazines, telephone network, etc. Other activities are sponsoring musical performance, and symposia with pianists (communications); distribution of publications for the association and promoting piano tuning; distribution of image, characteristics and press release materials.

Concerning the current status and future of pianos and technicians, we must first consider the impact of pianos and electronic keyboards upon music.

With an ever-decreasing birth rate in Japan, the number of children per family now is about 1.5. However, distribution of pianos against the total is 20%, which indicates a declining demand.

Ever since the electronic keyboard was introduced into the market, the demand for it has abruptly increased along with the development of techniques in electronic engineering.

Quality of tone, percussive sound, acoustic effects, and other features have been significantly improved.

In addition, new demand for automatic piano players with improved acoustics, as a result of integrating advanced electronic engineering techniques, is surprisingly increasing for lessons, hobby, and the background music for restaurants.

Certainly the electronic keyboard is replacing the piano in the low-cost piano market. However, promotional efforts for genuine quality pianos have

contributed in increasing the sales of grand pianos, and efforts for drawing attention and interest of consumers to keyboard instruments have enabled increasing the demand as a whole.

At any rate, we should devote ourselves to meeting the challenge of the changing world and making a strong commitment for widening our vision and taking appropriate measures.

The electronic keyboard, as explained above, is so compact, enjoyable, and easy to use that the demand has remarkably increased by these merits. Meanwhile the grand piano, representing the genuine quality piano, has steadily maintained its original share. We should be flexible and responsive to the needs of sophisticated customers demanding brighter tone with a colorful mixture of sounds, preferring more sensitive tune, harmony of original grave tone, smooth touch of keyboards made of natural material (emphasis on the value of touch) and others. Accordingly we should expand every segment of the target market to a maximum.

In order to expand existing piano demand, we should learn and hand down inherited techniques and knowledge so that further development and improvement can be made on materials to be used as well as on accumulated knowledge and personal character to provide better pianos.

The essential elements of acoustic pianos, i.e., ivory, deerskin, and artificial materials, have significantly developed, but resources of wood are getting scarce, and therefore the resources should thoroughly be protected.

The future of the piano is as we think at present, and not quite so serious to require immediate action.

Through cooperation and mutual understanding among piano builders, dealers, tutors, and technicians, we should direct our effort to drawing the attention of customers, in increasing demand, and to expanding the market.

Prospective piano technicians require excellent skills and keen sensitivity. Many years of continued effort are necessary to become a professional technician. Nevertheless, the reality is rather indifferent, and technicians are not well recognized by the public, and moreover many people do not realize the need for tuning pianos.

Social status of technicians should be improved through promotional effort of tuning along with renewed endeavors for the piano. However, concentrated effort on our part for improving skills and personality should precede other measures.

Optimum fees based on the price of materials, and stability of life based on income are regarded as fundamentals in ensuring excellent technicians.

The 21st century is known as an age of sensitivity. Piano technicians, destined to contribute to future peace, should learn and study electronic engineering, and exert their sensitivitywhich is highly demanded for the future.

Our task, therefore, is to brainstorm for making proposals for actions with a broad and peaceful mind. ≡

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The Creation Of A Monster

Ben McKlveen, RTT
1992 Institute Director

In the coming months in this space in the *Journal* I will be telling you about the Technical Institute that will be presented at the international convention next summer, July 23-26, 1992, at the Hyatt Hotel in Sacramento, CA. The institute runs from Thursday until Sunday noon this year so that those who attend can get the "staying over Saturday night" break in airfare.

One of the reasons we Institute Directors write these articles is to try to convince as many of you as we can to attend these events as part of your continuing education. We write also because we are in the process of creating the Institute and have been involved for several months before the first word about it appears in print. Those of you who have agonized through the organization of local or regional seminars have some idea of how a program of this magnitude is put together, but most people do not.

It takes a lot of effort by a lot of people to make an international convention work. For example, in late September, the national officers, some of the Home Office staff, two members of the Institute Committee and the Western Regional Vice President met with local chapter representatives in Sacramento and spent two days going through the Hyatt Hotel, convention facilities, looking at rooms, blocking time and space for the events to come, reviewing all facets of the last convention and making cost estimates for this one. The actual beginning was in the fall of 1989 when, after an invitation from the Sacramento chapter, Larry Goldsmith and I made our first excursion into the Sacramento Hyatt, examined the facilities and spent a day and a half trying to shoehorn our international convention and institute into the hotel.

That was in 1989. Since then, we have had conventions in Dallas and Philadelphia, where the hotels and convention space were a little larger than the space at previous conventions. By these standards our 1989 plans looked a little puny, sort of a regression in scale. It was necessary to rethink the plans for Sacramento in 1992. Fortunately, there is a convention complex beside the Hyatt, connected by a pedestrian mall that is as attractive as a small park. This convention center gives us the additional space we need. One building is made up of classrooms and support facilities that, when coupled with the hotel classrooms, will give our Institute the flavor of a college campus. The hotel is across the street from the California State House. The Hyatt serves as "home" for many California legislators and lobbyists during the legislative sessions. In July the legislature is not in session so we have the entire hotel and as much of the convention center as we need.

During the planning sessions we took the time to walk around the hotel neighborhood. The State House, across the street, is located in a park that is five blocks long and two blocks wide. The park is planted with trees and bushes from every part of the world. It is a joggers' and walkers' paradise. The neighborhood has a variety of restaurants and the traditional "fast food" shops are located within a couple of blocks.

I have been asked many times, "But, how in the world do you organize an Institute?" One of the first things to consider, after the classroom space has been reserved, is how many classes can we run at the same time? Too many classes makes the class attendance too small; too few classes and the classrooms overflow. (Sometimes these things happen in the best of circumstances.)

What subjects do we offer? Here, we are on a little firmer ground. The international Institute is the largest and most elaborate educational experience that the Guild offers its members. We seek the instructors with the most knowledge and experience to teach these classes. We need a mix of basic classes always. Like reading, writing, and 'rithmetic, we offer basic classes in tuning, repairing, regulating — and one more "r" — rebuilding. We go on from there to the more complicated, and the more esoteric. These classes address subjects as small as "centerpins," as obscure as "friction" or "aftertouch," as modern as "space-age adhesives," or as ponderous as "pinblock and soundboard removal and replacement."

For all of these classes there are instructors who have spent much time organizing the material and presentation, then honing the necessary

teaching skills at local and regional seminars, trying and reworking the material until it is ready for national presentation. The manufacturers who present classes are to be especially commended. They have produced classes through the years that take a great deal of time, money and effort to organize.

The Piano Technicians Guild is fortunate to have a large pool of excellent instructors. Some are gifted with the talent to do a number of things well, and can organize a variety of classes and teach them. Many of these people appear year after year at the international Institutes.

The problem of the Institute Director is not where to find qualified instructors, but how to present a balanced program within the framework of space and attendance limits.

Once the space has been obtained and the classes and instructors have been chosen, the logistical problems really begin. Scheduling has to be done, pianos and equipment must be obtained for the classes, arrangements must be made for the exhibitors. The Home Office, active from the very beginning, has now to assemble a program, get badges, make signs, obtain tickets, and make up registration packets. Then all must be coordinated to run as it was planned. This takes real effort. The end result is that 60 or 70 instructors will teach nearly 1000 students in 140 or 150 time slots in three and a half days. Being Institute Director is a little like being the dean of a small college for a week. During that week, in addition to the Institute, Guild business is being addressed in Board and Council meetings, friendships are established or renewed, and a lot of piano information is exchanged among registrants in the halls. This is a general picture of an international convention.

Now, consider the costs. An early registrant who is a Guild member can pay as little as $140 for three and a half days of instruction. A nonmember will pay $210. If you were a doctor, a dentist, or a veterinarian attending the same type of program, your registration costs would be $500 or more with the possibility of surcharges for some classes. By these standards, our institute is a real bargain.

In future articles, I will bring you the specifics of the 1992 Institute in Sacramento. It is a monster — a benign and creative monster — but, a monster nonetheless! I wanted to describe its creation to you. A lot of midnight oil is being burned by instructors and staff in the preparation of this Institute for your benefit.

Won't you please consider attending? Start now, and I will continue my story next month. ≡

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TECHNICAL FORUM

The Holiday Season: Gifts, Resolutions, And Retrospectives

Jim Harvey, RTT
Editor

Today as never before, we are concerned with matters dealing with ecology. Recycle this and save that are words that we hear practically every day. Many communities across the country have implemented programs whereby recyclable materials can be separated from household refuse and put back into the "system." My town is one that recently started one of these campaigns. While I have mixed emotions about the costs involved, and what is and is not considered as being worthy of recycling, I am delighted to see how many citizens are participating without threats or additional encouragement.

We are also faced with concerns over the use of certain materials. Some items and materials that have been used for many years are now considered taboo, and in fact hazardous either to ourselves or our environment.

As a group, I like to feel that piano technicians contribute an insignificant amount to the deterioration of our planet. But regardless of how minimally we make an impact, we *do* generate our share of negative things.

With this in mind, I would like your participation in sharing any ideas and methods that you have adopted with regard to either *minimizing* the problem, or *maximizing* the use of available resources. I realize that there is always the risk of point/counter-point in these matters. For instance, do you use paper towels or shop rags in your office/shop? If you use paper towels, there are the trees and the paper processing problems to consider. If you use shop rags, you get more "mileage" as a result, but at the expense of, and related problems associated with the use of detergent, water, and pollution effects involved with laundering those rags. A parallel to this would be the controversy surrounding the use of paper versus cloth baby diapers. Either decision is wrong, depending on which authority is used for reference. But then, this is a forum, right? Let's consider a few additional, hopefully easier examples.

- With minor surgery, just how many ways *can* a 2-liter plastic soda bottle be reused?
- Do you now purchase your necessary solvents, paints and lubricants in bulk (when available), or do you still opt for the convenience of aerosol packaging?
- Do you feel that switching to the low-pressure, high-volume type of compressor is beneficial for the purposes mentioned here?

A recent incident comes to mind, and one which confirms my earlier point as to what qualifies as recyclable. I was faced with the problem of removing a glass storm window in my shop. The installer had not only screwed the frame down, but had run a "liberal" bead of silicone around the entire perimeter of the frame. Incidentally, this was why I was trying to remove it. I wanted some fresh air circulation in the shop, instead of being hermetically sealed inside and dependent upon the use of the air conditioner. A careless gesture on my part caused the glass plate to break. Later, after using another (and more appropriate) method of removal, I placed the glass (only) into the recycling bin. After the contents of the bin had been picked up, I was surprised to find that they had refused to take the glass. Rather than trying to determine why they had left it while taking other glass items, I did something I *should* have done in the first place (empirical evidence to support the theory that stupidity does strike twice). I cut the glass into appropriate smaller pieces for use in the shop. Being flat, these smaller pieces are perfect for mixing epoxies, making slurries for sharpening tools and/or truing whetstones, and so on. I'm now thinking of having an "accident" with one of the remaining storm windows — I would like even more air circulation, and for some time I've thought about building a light box and making my own frosted glass for it.

I could continue, likely for many pages, without too much thought, but right or wrong, I already know what I'm doing. I simply want to provide some idea "seeds" for your subsequent input. Give this some thought as we approach the new year, perhaps during those relatively quiet moments between Christmas and the New Year. Then I'll assemble the information in some reasonable order, and present it here in the Forum.

Now let's explore some tips on making the most of another sticky situation, specifically, glue pots and modifications. We'll start with an article from the Sacramento chapter's *Valley Technician* newsletter.

Glue Pots

Like a lot of people in our chapter, I use an old coffee percolator for a glue pot when using hot hide glue (I think we first picked up this idea from Durrell Armstrong's Player Piano Supply catalog about fifteen years ago.)

The percolator has many advantages over the "professional" glue pots sold in the piano supply catalogs:

1. The hole in the lid is great for glue brushes or stick applicators; 2. The steamy atmosphere under the lid keeps the glue from skinning over; 3. The spout is a handy place to rinse out brushes or store them when you have to leave the job temporarily; 4. The

spout is also a source of hot water to pour into a secondary container and then into the glue mixture if it becomes too thick; 5. The cost of a used percolator at a thrift shop is usually less than three dollars.

With my percolator glue pot, I always had a problem finding the correct size spacer to go in between the bottom of my glue container (various sizes of tin cans) and the bottom of the pot. Usually they were all a little too short, which meant my glue container would float around under the lid of the pot. This, of course, was a hindrance because anytime I wanted to load my brush or stick applicator with glue I had to chase the glue container around underneath the lid.

One day I decided I was trying to solve this problem from the wrong direction — the bottom. Maybe what I needed was some sort of a spring under the lid to hold the container down (I had also tried using a magnet between the tin can glue container and the spacer. That worked sometimes, but just as often as not they would both float up).

A spring did not pop up to my imagination, but a length of foam tube insulation did (the tubular sleeve type with a slit down the length which is used to insulate the water pipes under houses).

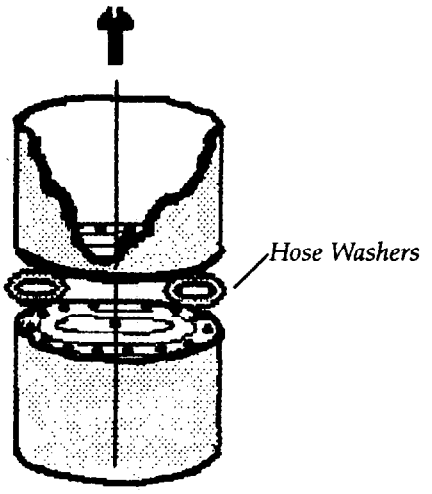
A small piece pressed between the lid of my percolator glue pot and the rim of the tin can solved my wandering glue container problems with an added advantage. The edge of the foam piece covers a little bit of the hole in the lid, thus giving me a soft, non-porous surface to wipe the brushes and stick applicators on (the pipe insulation is a closed cell foam which does not absorb water).

For more information about using hot hide glue, check out these sources: Journal - *August 1988, pg. 18;* Journal - *December 1965, pg. 14;* Journal - *March 1981, pg. 14; and* Fine Woodworking *#57 - March/April 1986*

Yvonne Ashmore

Off the immediate subject, but I read where computer owners could use this same pipe insulation for an inexpensive keyboard wrist rest, thus helping ease carpal tunnel effects: simply slide the split edge of the tubing over the edge of your computer desk. Now continuing from the same newsletter...

In addition to Yvonne's comments... We have found a couple of steel food warming dishes about three to four inches in diameter and various depths, that rest on the lip of the coffee pot. I cover this with a plastic lid with a hole punched in the middle for my glue brush. Yes, the glue tends to thicken up



a little after a while, but additional water usually solves the problem. We found these stainless steel "cups" at thrift stores and auctions. Another source might be used restaurant supply houses.

Another type of "glue pot" was mentioned by Del Fandrich in a recent Journal. *The small potpourri pots work well. The thermostat may need adjustment to bring the temperature setting to the proper level. Happy gluing!*

Sonja Lemon

I have used both the commercial glue pot and various substitutes. Even without price considerations, I too can attest to the merits of the *less* expensive versions. But for those who already have recent models of the "regulation" version, I offer these suggestions: 1. Forget about adding water to the outer jacket, as these units are controlled by thermostat and use *air* for the "double-boiler" effect; 2. Instead of using the inner liner to hold the glue, simply place the amount of glue required for the job into a glass container, and place the entire works into the inner jacket — it saves glue, and makes cleanup much easier; 3. Remove the friction-fit, brush-wiping, fall-over preventing wire bail from the inner jacket, and substitute the plastic cover from a three-pound coffee can — it *almost* fits — and cut a hole in the center for your glue applicator. If you want the benefits of brush cleaning, or need the peace of mind assurance of having the water jacket, then go ahead and add water to the *inner* liner, so that the water surrounds your glass container.

As still another variation to the percolator/potpourri/other theme: during a visit to the thrift shop, they were zeroed on their percolator inventory (one which changes daily without notice). Instead I found several *West Bend Hot Pots,* (model 3253 stamped on the bottom), all in excellent condition, and all for three dollars each. I opted to buy one and see whether it would work as a glue pot. Now I wish I'd bought and modified *all* of them, and sold the others to colleagues in my chapter. This little pot has the following virtues: 1. An *adjustable* thermostat, the lower settings being perfect for hide glue; 2. A *locking* lid in lieu of a friction fit; 3. a raised area on the plastic lid that originally (and still) serves as a handle for installing/removing the lid; 4. A slit in the edge of the lid which fills the brush-cleaning criterion; 5. A much cleaner profile (for storage) and benchtop footprint (for stability) than a percolator; 6. A removable cord.

The modifications required to the pot itself were simple — remove the plastic lid and "create" a hole *inside* the existing plastic lid handle — that's it! I use the word create here — I used a Forstner bit, but since the lid is plastic you could probably use a sharp knife, keen eye and steady hand. The inside of the lid handle also serves as a convenient, impervious-to-glue area to wipe excess from the applicator, with any residual glue finding its way back into the mix.

As Yvonne indicated, finding suitable containers for the inside of the pot is the usual problem. In this pot there is a raised ring in the bottom (likely the home of the heating element), the inside diameter of which is perfect for accommodating, and immobilizing, a Vienna sausage can (which had best be pronounced like *"hyena"* around my part of the country if one wishes to be understood). By the way, if you plan to eat the contents prior to recycling the can, *don't* read the label! Refer to the cutaway illustration as you read the procedure for fitting out the inside of the pot.

One can should be punched with a series of holes around the outer perimeter of the bottom. Since the corrugations are already there and the can is aluminum, an awl is adequate for making the holes. The measurements are not critical — always wanted to say that — since we only want to permit water to pass *through* the can, *not* fill up with air when inverted.

Use another can (also without original contents but with the holes), and place it upside down over the first

can. In other words, the cans are now bottom to bottom. Drill a hole through the center of *both* cans. I used an aluminum pop-rivet to loosely join the two cans. I would suggest that *you* use a 6-32 or 8-32 x 1/2 to 3/4" machine bolt and nuts; the reason in a moment.

Using any type of rubber or neoprene washers as shock-absorbing shims (I used garden hose washers), adjust the spacing between the two cans so that, when everything is assembled and tightened down, the entire can and lid arrangement becomes pressure fitted — a sandwich, if you prefer, where the locking lid makes all the other components captive. My setup required four rubber washers, all on the same level to keep the two cans from rocking back and forth on the center axis. You may be able to benefit from my lack of foresight by using the machine screw instead of the pop rivet. This way, you can likely get by with one or two shimming washers in the *center* of the can, and secure them to each other with the bolt and nut arrangement, instead of using the washers as both spacing *and* leveling shims between the cans. This part of the project is so simple, I would make mine over, but after reading the ingredients on the label — let's just say it will be a while before I have access to more cans.

Place the cans inside the ring of the pot. You'll then find that a 2 1/2-ounce baby food jar makes the perfect glue container, once placed inside the upper can. Fill the pot with water up to the neck on the baby food jar, and you're all set. I've found that I can walk away from the pot for long periods of time without worrying about glue skinning. I've even left the pot plugged in for several days (with glue) by removing the applicator from the lid and replacing the original top from the baby food jar. You may wish to put a cork in the hole as well if left unattended for long periods: if all the water evaporates, the heating element will self-destruct.

This may seem overly complex. But the idea is to make all the components integral to and dependent on each other for both function and stability. When not in use, the cord, jar/top, cans, and maybe your applicator(s) can all be stored inside the pot, ready to be pressed into immediate service. While I like the idea of Yvonne's pipe insulation tip, I haven't had justification to try anything like this. With the combination as described, nothing moves, at least not enough to cause any problems. Even if the cans should shift out of position, there is no way for the jar to fall over and dump glue into the water. And although the jar has a small amount of movement, it cannot move inside the can to the point where the glue becomes inaccessible from the top opening.

One last point before leaving this subject. I am reluctant to mention this since it oozes of favoritism and endorsement. That is not the intent. I just wish to point out that I have tried and am impressed with the hide glue flakes that are (to my knowledge) available only from Pianotek. I'm not aware of any differences in gluing performance, but will simply state that it *looks* better, mixes nicely, and has a barely discernable odor. Anyone want to buy five pounds of "regular" hide glue flakes?

Additional Information On Epoxy/Fiberglass

Considering the time lag between correspondence and publishing deadlines, I'm trying to keep responses/addendum material as close to the original article as possible. With this in mind, Glen Hart provides additional information to this statement from the September 1991 *Journal*, page 27: "A top quality, industrial grade filled epoxy is used... a filled epoxy is required since it has body to give it compressive strength. Fiberglass resin is not suitable, since it lacks this strength."

To the New Technical Editor (whoever you may be!):

In a recent article in the Journal *it was stated that polyester resin is unsuitable for bedding a pinblock because it lacks sufficient compressive strength. After calling five polyester resin manufacturers and talking to their technical departments, I found that they could give data on tensile strength, shear strength, flexural strength, elongation, hardness, etc. etc., but not one of them even tested for compressive strength. Their answer was that this information was not needed for this material and that no one had ever asked for it (sounded strange to me too). Graduate school taught me that the information is always out there if we will dig deep enough. To make a long story short, I found the information in "Modern Plastics Encyclopedia," 1991 edition, pp 607, 625.*

The compressive strength for unfilled epoxy resins ranges from 15,000 to 25,000 psi depending on brand. Filled epoxies range from 15,000 to 35,000 psi with a shrinkage of .001" to .010" per lineal inch. The compressive strength for a rigid cast polyester resin with no filler is 13,000-30,000 psi before rupture, depending on brand, with no shrinkage.

The compressive strength for hard maple is 7830 psi parallel to the grain and 1470 psi perpendicular to the grain ("Agricultural Handbook," 72, USDA p. 4-6). A pinblock therefore, would have a compressive strength of 4650 psi.

Using round and very conservative numbers, if we have a plate under 25 tons of compression and a plate flange one inch high and 50 inches long and we ignore plate screws and tuning pin bushings, we have: 50,000 lbs / 50 in^2 for a pressure of 1,000 lbs/ in^2 (psi) exerted by the pinblock against the plate flange. The true value is actually closer to one-half this amount. According to this data, I must conclude that polyester resin, while not as compressible as epoxy, far exceeds the requirements for pinblock bedding. A plastics engineer also told me that the industry uses micro-talc to increase viscosity to change a resin to a putty and that this also increases compressive strength.

Epoxy far exceeds polyester resin in adhesive strength. I feel, however, that the polyester resin/pinblock joint will not fail. I have pieces of pinblock with 1/4-inch layers of resin, jelly, and putty that I made as experiments 10 years ago, and to this day I can't knock them apart with a hammer. The boat industry doesn't seem to have a problem with this. I have "glass-bedded" the barrel of my hunting rifle to the stock to increase accuracy. This is a common practice in the gun world. Rifles are subjected to extremes in temperature and humidity in the out-of-doors, not to mention shock, and I have never seen one come apart.

This subject is not my forte. If anyone can support this data or set me straight, I would much appreciate it. Something valuable to know would be the rate of creep over time while under pressure which is why yellow and white glues are not allowed in structural beams and in my opinion should not be used to attach ribs to soundboards — an entirely different subject.

Glen Hart

Tuning Class Review Reviewed

Dear Jim,

Congratulations on your appointment as the new technical editor of the Journal. *I*

would like to respond to the review of my tuning classes at the Philadelphia convention which appeared in the September 1991 Journal *(p 20). In general I felt it was an honest, fair, and quite accurate review considering that the author was obviously steeped in the matching partial approach to tuning. While he did admit that the tuning "was indeed a high-quality aural tuning," he stopped short of admitting that the single, double, triple and quadruple octaves were all beatless, and that this was accomplished by hearing and eliminating beats between the two different pitches involved.*

I feel I clearly demonstrated that octaves can be tuned by hearing and eliminating the beat between the two pitches of the octave; the real question is the source of these beats and their validity in tuning. Two observations would indicate that the beats are not from coincidental matching partials: 1) When the beat is eliminated there often is a beat between each set of matching partials, and 2) no matching partial can involve the lower pitch of the octave, the upper note could not possibly have a matching partial to the pitch of the lower note. Obviously the beat is not at the unison because it is heard between two pitches an octave apart.

One possible explanation is that beats occur when two different pitches are not in exact phase. When one pitch is at 440 and another at 220 the pitches are in perfect phase and the sound is beatless like a unison, but if the one pitch is at 219 or 221 they are not in phase and the ear hears a beat as when two strings of a unison are one beat apart. This may be difficult to prove until we have an electronic device that can accurately measure the pitch as the ear hears it. As of now the machine reads only the pitch of the isolated fundamental minus the influence of the partials; the ear hears the fundamental pitch influenced by the partials which because of inharmonicity will be higher. I suspect that single, double, triple and quadruple octaves are possible because we are tuning the pitches the ear hears to an exact 1-1 ratio, the pitches themselves, not the partials, are at a pure 1-1 relationship.

Why does all the math being promoted today seem to contradict and imply certain tuning techniques as impossible? One possible explanation is that the math deals only with matching partials, and really does not apply to the actual pitches involved in the octave. At best only one set of matching partials (often none) will agree with the best octave throughout the entire tuning. Therefore, the math of the partials cannot be expected to agree with the actual relationship of the octaves. While it is possible to train the ear to hear the pitch of the specific partials, in actual music practice only the fundamental pitch is heard from each note, the partials serving only to determine the timbre of the note. How the partials relate is secondary to how the actual pitches relate. Because the electronic tuning device cannot measure the exact pitch of each note, visual tuners must rely on matching partials to find the best octave, but aural tuners can tune beatless octaves without being concerned with the partials.

It simply involves concentrating on the two pitches of the octave sounding together and tuning out the beat between the two notes. Checking single, double, triple, and quadruple octaves along with various interval tuning checks will guard against being satisfied with less than the best octave, provided the temperament is completely accurate.

The tragedy of the present situation is that tuners are being turned away from a practical, legitimate octave tuning technique to a complicated, and very difficult one. It's like ignoring the main expressway into the city, and choosing instead several narrow side streets, none of which lead to the exact destination.

It is hoped that the above in addition to the Philadelphia classes will motivate many tuners who are now tuning octaves by matching partials to experiment with tuning octaves by eliminating the beats between the two pitches of the octave. It should be exciting and very rewarding to discover that all the octaves involving one note can be brought into exact phase with each other. It will also be found that this is not possible unless one is aware of and corrects the slightest slippage that occurs during the tuning.

Virgil E. Smith, RTT, and MA Music

A Few Resolutions And/Or Gift Ideas

You mean well. One of these days you're going to get organized — including those past issues of the *Journal*. At the moment, one could be near (or under) the telephone, and one is beside your favorite chair. One could even be folded and used to level your band saw. Some issues likely include *extra* printed matter, ranging from hammer felt filings to gravy stains to other mystery matter left over from trying one of the procedures described therein, depending upon where you read that particular issue.

Perhaps you have a system, consisting of old orange crates full of *Journals* stored in the basement, the garage or a corner of your shop. You know, the box which permits things to collect (and sometimes grow) on your magazines. Just try to get to a particular issue with this method.

Whatever the storage method, it is generally accepted that *Journals* are not typical periodicals. I've never known a piano technician who made a practice of reading an issue, then using it to line the bottom of the bird-cage. Instead, we tend to keep earlier issues as an archival source; a reference base upon which to get a quick refresher course when a not-so-often used procedure is called for.

I have found a couple of storage methods that work for me. Each provides quick retrieval. The first may seem expensive, if not overkill. For quite a few years, the *Journal* has been published in a nominal 8-1/2" x 11" format. I was able to purchase a nice full-suspension four-drawer file cabinet during a going-out-of-business auction. To date I've only used the bottom drawer, but have room to store between thirteen to fifteen years of *Journal* issues — in *each* drawer.

The trick is to use those Pendaflex-style hanging file folders, the type that ride along steel glide rails inside the drawer. One folder will comfortably accommodate one full year's worth of *Journals*. They are kept clean, dry, and orderly. Just start with January at the back, and fill from the front, so the December issue ends up being the first issue in each folder (with the current issue always being at the front of the drawer). Each folder contains a single tab, the special type that clip onto the folders, which are inscribed with Journal 'xxxx,' where the x's represent *only* the year. You also have room to place a manila folder in each hanging file. This serves a two-fold purpose. One is to place all those notes from various classes attended that year — those that you've been meaning to organize, one folder per year (unless you take a lot of notes). The second purpose is to act as a bookmark when you've removed a particular issue for review. Finally, there is room right in the front of the drawer for your *Journal* cross-reference indexes.

In case this seems like expensive storage, I'll mention that my initial $40 investment gives me approximately *sixty*

years of dry, orderly storage. That kind of amortization is satisfactory for me.

The other storage method is good for those earlier *Journals*, which were a larger, more typical magazine-style format. For these you may elect to use the corrugated knocked-down cardboard magazine containers that are widely available. These are the ones which are *always* ugly, and *always* overpriced for just a piece of cardboard. Just be sure that your shelves are not made of particle board. They quickly start to sag with years of issues loaded on them.

To conclude the Forum for this month, an article by Bob Bartnik which appeared in the *The Richmond Update* newsletter. This may provide ammunition for those inclined to drop hints during this time of year.

Up until about a year ago I thought a biscuit joiner was either gravy or jelly, but exposure to such shows as "This Old House" and "The New Yankee Workshop" on PBS soon gave me new insight into this marvelous development. Basically, a biscuit joiner is a mini-circular saw cutter that makes a plunging half-moon slot in wood into which a compressed wooden elliptical "football" is glued in place. The moisture in the glue swells the biscuit making for one tight joint, believe me! Available in three sizes, these very neatly take the place of the old dowel method of repairing or joining wood.

Bruce Winn and I used it the other day to repair a grand lid broken in two pieces. Mark a line across where you wish to join the two pieces; adjust the biscuit cutter to make the cut as near half-way as you can, although this isn't extremely critical; align the mark on the board to the mark on the hand-held machine and with an easy motion make your plunge cut in both sides of the lid. Space the biscuits about every six to eight inches and complete the cutting operation.

Here is where it gets interesting. Use carpenter's yellow glue and lay a nice, even but light coat along the two pieces to be joined. Glue the biscuits up and insert into the holes and push the two pieces together. With minimum pressure from clamps, the boards are aligned and tightened, and the glue swells the biscuits locking the pieces into position, making a joint vastly superior in ease of operation and strength to dowels. The drying time of the glue allows you plenty of time for alignment and the elliptical slots allow for left/right movement until the biscuits swell. Best of all, it is super strong and neat without the hassles of dowels. Oh, yes, you can also use the machine for woodworking as it makes making face frames for cabinets a snap!

Costs vary according to the machine — Sears makes one that uses your router. Mine is an individual machine, mid-priced at $150.00. Biscuits are sold in packs of from 20 to 1000 and run four bucks and up.

Item: An interesting adaptation of the old sanding belt recently found its way into the tool catalogues. For those of us with a 6" x 48" belt sander who do a lot of sanding but hate to change belts to get a different grit, take heart. A dual-grit sanding belt is now available that allows you three inches of two different grits on the same belt. For the most part we rarely use the width as much as the length so this makes a whole lot of sense to the ol' toolmeister. At ten bucks a pop it is a little steep but the availability of not having to swap belts may make it worth it to you.

From all of your officers, home office staff, feature writers, and myself: May you each enjoy a wonderful holiday season. See you next year.

TUNING UP

Swan Song

Rick Baldassin, RTT
Tuning Editor

This article will be my last as Tuning Editor. It marks five years of writing in the *Journal*. It is fitting that my final article include the writings of two who have contributed in the past.

The "Marshmallow Zone" Re-Visited
by Daniel L. Bowman, RTT,Richmond Chapter

(Editor's Note: This article originally appeared in the October issue of the Richmond Update, *the newsletter of the Richmond Chapter of the Piano Technicians Guild, and is reprinted by permission)*

The following is a continuation of my efforts to understand what I earlier called the "Marshmallow Zone" and how to cope with it. This train of thought began with the article "Some Thoughts on Unstable Tuning," which appeared in the February 1989, issue of the *Piano Technicians Journal*. This article and responses to it by Norman Neblett and Rick Baldassin in the April 1989, issue were reprinted in the August 1990, issue Tuning Up section. Those responses and other related articles in the *Journal* were most helpful in further clarifying my thinking about what is going on in that "marshmallow."This article will look more deeply into causes of the "Marshmallow Effect" and next month into techniques for coping with it.

For first time readers, I should point out that the term "Marshmallow Zone" came to me as a word handle for that zone of mushy, dragging springiness, that springiness amidst friction that you feel as you move the tuning hammer either direction. It's a corny term, of course, meant to be so — something like "pully key" or "bubbling hammer."

Causes For The "Marshmallow Effect"
1. Tuning Pin Flexing

The tuning pins bend (flag pole) and, more importantly, twist as they are moved either direction by the tuning hammer. This is a springy, elastic bending and twisting, not a permanent distortion. The friction in the wood hole which holds the pin against the string pull is also enough to hold the pin in a twisted state other than that caused by the string pull — at least for a while. The pin does not have its full holding power against the string pull, that is, it may not be stable, if there is any twist left in it other than that imparted by the pull of the string.

This phenomena is often discussed. Rick Baldassin mentions Jim Coleman's experiment with pointers attached to the top and bottom of the tuning pin which demonstrate actual twisting. Owen Jorgensen says in his book "Tuning the Historical Temperaments by Ear," that the sensation of pin bending and twisting actually arises from events in the wood fibers of the hole, not from actual bending and twisting of the pin. After tuning one of those Wurlitzer pianos with the tuning pins set in a cast iron pin block (no kidding, no wood, all iron!), and after some "messing around" (I really can't call it experimenting) with tuning pins in my shop bench vise, I have come to believe that the pins do actually bend and twist a bit, but not as much as it feels like in some pianos. The wood fibers gripping the pin are probably also dynamically involved, somehow adding to the sensation of flexing and twisting.

The presence or absence of tuning pin bushings affects the "feel" of bending. The height of the coil above the gripping wood affects the "feel" of twisting and bending. Bruce Winn, in one of the Richmond Chapter meetings questioned whether the elasticity of the steel wire used in making tuning pins is constant. In other words, one set of pins may be more elastic than another.

2. Bearing Point Friction

String rendering is made problematic/erratic by the heavy rubbing across bearing points *and* by the "hugging" effect of the bends in the stiff wire. It is well known what age and corrosion does to bearing point friction and string rendering. The problem of unequal tension across the various string segments caused as the string is dragged from one end by the tuning pin across the several bearing points, each with friction and wire hugging, is also well known. Norman Neblett, in his above mentioned article, points out that total equalization in all segments is impossible, and by implication, not necessary for stable string setting. But uneven, erratic *rendering* across bearing points is a problem to be coped with in stable tuning.

Every time I hear/read discussions about massaging or rubbing the strings to make them conform more closely (hug) to termination and bearing points (for better stability and tone), I wonder what happens to string rendering.

3. String Elasticity And Tuning Pin Segments

Tuning pin flexing/bending and bearing point friction are well known and often discussed in connection with tuning stability. To my knowledge this third contributor to the "marshmallow effect," string elasticity specifically in the tuning pin segment, has not been discussed. It has come clear to me only slowly and perhaps is not all that clear yet. Piano strings do stretch *a lot* in the tuning pin segment, *independently* of the tension in the speaking length segment. This is pronounced enough so that you can often get considerable pin movement, pin-flexing or whole-pin movement in the wood, with no change occurring in the speaking length segment. This probably frustrates more stable tuning than does pin twisting and bearing

point friction.

String elasticity should be thought of as a certain quantity of "stretchability" per linear unit. When strings are different in total length, though their speaking lengths and tensions are identical, their total elasticity will be different and, therefore, their response to identical climate changes and tuning pin movements will be different. Have you ever noticed that as a well-tuned treble section starts to go out of tune due to changing climate, there is a uniform pattern of deviation — all the right strings or left strings are going out about equally? Is this not because differing total string elasticity in right and left strings makes the strings react differently to the rising/falling bridge? But, it is the elasticity of specifically the tuning pin segment which immediately impacts the string's tuning behavior. The longer the tuning pin segment, the more elasticity; the more elasticity *and/or* bearing point friction, the more pin movement there will be *independently* of pitch change. And, the greater this gap between pin movement and pitch change, the more potential for frustration on the part of the tuner.

Let this string elasticity business soak into your "tuning consciousness." The more total elasticity in a string, the more easily it will tune. The longer the tuning pin segment and the more it is isolated from the rest of the string by bearing point friction, the more frustrating it will be to tune. Notice the variety of patterns of tuning pin placement in different piano designs, some with very long, some with very short tuning pin segments. Notice the differing clamping arrangements of string bearing systems. See if there are any differences in tuning responsiveness. The differing effects of varying lengths of tuning pin segments will be more apparent where the total string lengths are shorter in proportion to the tuning pin segments, namely treble sections as opposed to tenor sections. Bass sections, grands and verticals, tune the most easily. Their tuning pin segments are proportionally the shortest and their total string elasticity is higher (due to smaller core wire diameter). Recall that grands generally have much longer tuning pin segments that verticals. Any light bulbs going on? I tend to think of grands as being more difficult to tune because they have more bearing point friction than verticals, but perhaps their longer tuning pin segments are the more important variable in making them different from verticals.

Notice the different lengths of tuning pin segments in a single three-string unison. Typically in a vertical, the bottom pin is one inch and the top pin is 3.5 inches above the V-bar. This means the elasticity of the tuning pin segments will differ in a ratio of 3.5:1 or 7:2. Have you ever noticed that the bottom pin of a treble three-string unison is frequently harder to tune than the top pin? The pitch wows around, fluctuates more than when tuning the top pin. Presumably because of pin-block design and construction, the bottom pins are often less stable that the top pins; they seem to flag-pole and wobble around more. (As pinblocks age; their lower pins seem to fail first. Their tuning pin segments are also shorter, meaning less elasticity between pin and speaking length. This in turn means that the slightest movements of a more wobbly pin are transmitted more quickly to the speaking length. In contrast, the top pin, already more stable, has in addition a longer tuning pin segment which acts as a cushion between pin and speaking length. This would suggest that ease of tuning calls for a happy medium between too much and too little bearing point friction and elasticity in the tuning pin segment.

Next month I'll try to collect my thoughts on techniques for coping with these marshmallow effects.

*****

Our thanks to Daniel for his contribution. I hope that he does, in fact, collect his thoughts for coping with these problems and submits them for publication. Our next contribution comes from Michael Travis, RTT, of the Washington D.C. Chapter.

Treble Mapping With The SAT

by Michael Travis, RTT, Washington D.C. Chapter

(Editor's Note: This article originally appeared in the October 1991 issue of the Alpha News, *newsletter of the Washington D.C. Chapter of The Piano Technicians Guild, and is reprinted without permission. At this point, it is easier to obtain forgiveness than permission)*

Treble mapping is a shorthand description of an aural-electronic procedure I use to record a "custom" tuning from note C5 up. The optimum placement of each treble note in an octave is measured and recorded prior to tuning by application of one of two treble tuning "rules of thumb." Then, immediately following tuning, aural verification and "editing" of the results, the next octave is measured and recorded and the process repeats. The three cycles of measurement, recording, tuning, listening, and editing which proceed from C5 through C8 are what I refer to as treble mapping.

For each piano you service regularly, it is useful to have a record of the optimum preferred tuning so that you are able to do the best job possible in the least amount of time. To record a tuning, you need a measuring instrument such as a Sight-O-Tuner (SOT) or a Sanderson Accu-Tuner (SAT). The SAT offers the advantages of reliable accuracy and a number of built-in functions, including memory storage and recall. Once you have pitched and stabilized the piano (don't forget tightening plate bolts and seating strings on bridges) and you have tuned, aurally verified and recorded at least the midrange and are happy with it, you are ready to map the treble. I usually tune with strip mutes, which facilitate this procedure.

The first treble tuning rule of thumb I use is this: Rule 1: Record the fundamental of the treble note being tuned after visually and/or aurally compromising between the 2:1 single octave, the 3:1 P12th and the 4:1 double octave so that all of these intervals sound as clean as possible, and you get a reasonable progression of beat rates in the M17ths.

I didn't invent this rule, but find it gives me the kind of treble tuning I like. Treble mapping with the SAT employs this rule as follows.

After recording and "playing back" the midrange through B4, being sure the record exactly reflects the optimum tuning, we are ready for C5. With the SAT set on C5, play C4, stop the lights, and add one cent to the display. Now play C3 (double octave) and F3 (P12) observing which way the lights rotate with each. Most often at C5, the double octave will be two to three cents wide and the P12 pure to slightly narrow when the single octave is one cent wide. If this is the case, adjust the SAT to

stop the lights while playing the P12. Avoid stretching 2:1 single octave wider than about 1.5 cents in this range. Each note's setting is a balance between the single and double octaves and the P12, favoring purity in the P12 to the extent allowed by the octave intervals. Once you obtain a good visual compromise, record the measurement and proceed to measure and record C#5 to B5 in the same way. Now go back and tune C5 to B5 visually to your measurements, and then run some aural checks. Listen to parallel octaves, P12ths, double octaves, and particularly M17ths. Try to have all consonant intervals sounding equally pure, and to have a reasonably smooth progression of M17th beat rates. Edit the record and retune any problem notes you find until you are satisfied all setting are optimal. Once this is completed, proceed to map octave six (C6 to B6) in similar fashion: measure, record, tune, listen, edit.

While editing octaves five and six you may also want to recheck octaves four and five to be sure anything that sounds like it needs changing really does, and that the problems you hear are not due to drift in octaves four and/or five.

Usually the checking phase is over fairly quickly, and you are ready to map octave seven. This is where the second rule of thumb for tuning the treble kicks in: Rule 2: In octave seven, stretch the single octave only as wide as the upper limit of the range in which you get a good resonance with the (unplayed) open string one octave below, while striving for 4:1 double octaves as pure as possible. Usually this means tuning one to two cent wide 2:1 single octaves.

Starting at C7, play C6. Stop the lights, add one to two cents, and play C5. Try to stop the lights near a pure 4:1 double octave, but avoid going wider with your 2:1 single octave than about two cents. Record the best visual compromise for C7. Repeat for C#7 to B7. Now tune, listen to and edit octave seven, rechecking lower octaves as before to verify octave seven problems. Play parallel octaves, double octaves, and M17ths (if those pesky false beats are not too bad). Once you are satisfied with the tuning of C7, go ahead and map C8.

I do not necessarily ignore the P12ths in octave seven, but they almost always get fairly narrow toward the top with this type of tuning. On very few pianos you will be able to simultaneously get clean-sounding single and double octaves, and P12ths. So I favor the octaves, and usually the octaves sound so good using rule 2 above that nobody cares about the P12ths.

Now review the top 13 notes by playing each one with its SAT setting displayed, making sure you get a good resonance with the open string(s) one octave below, silently pressing the key to raise any dampers. Ideally, you will be able to hear the extra sustain and brightness of the note you are checking with the SAT lights more or less stopped, indicating you are real close.

Now you can go back to C5 and recheck everything by quickly stepping the SAT up chromatically while playing the notes to be sure nothing has drifted. And you can make final aural checks with octaves and M17ths. At last, you are ready to either tune unisons or proceed to map the bass (the subject of another article).

The first time through on a mapping expedition takes me upwards of two to 2.5 hours, assuming the piano is on pitch and stable, and bearing in mind that I am a member of the Society of Slow Tuners. The payoff is on subsequent visits when you can achieve a very high level tuning in a minimal amount of time.

*****

Nostalgia

The next two items are reprinted from the *Tuner's Journal*, courtesy of Wally and Vivian Brooks. The responses are by Nels C. Boe, of Kansas City, MO. The first was published in the April 1925 issue of the *Tuner's Journal*.

I hardly thought I would be writing you again so soon, but being young in the business I have much to learn.

Just what does proving by 10ths and seventeenths mean? I see this mentioned frequently in the Journal, and as it was not given me in the beginning I don't quite know how fast they should beat or their relation to one another.

H. E. Sisson; Augusta, GA

Proving by 10ths and 17ths means that an octave is tested in its trueness by a 10th, which is one octave plus one major third, or by the 17th, which is two octaves plus one major third. It is simply an octave test and their beat frequencies are, if the octave or octaves are true, the same in both intervals and of the same frequency as the major third of the same fundamental note; that is, if the major third C2-E2 beats with the frequency of five beats per second, the 10th C2-E3 and the 17th C2-E4 will also beat at the same rate, or five beats per second. Naturally, as one ascends their frequencies should increase, while the reverse is the rule when descending.

It is rather strange that so few tuners employ a test for their octaves. There seems to be a general belief that tests and proofs are meant to be used only in the laying of the bearing, and that after that, all tests are superfluous and unnecessary. And still it is a fact, strange but true, that few tuners possess a musical ear sufficiently acute to tell whether or not an octave is tuned absolutely perfect. We are acquainted with quite a number of otherwise clever tuners who were at fault in this particular, and who were not a little astonished when challenged and by tests proven to be in error.

It is a fact, with which all tuners who use tests for their octaves are acquainted, that an octave will sound correct whether it is a little flat or a little sharp on the side of perfect, and it is only through the most careful test that any such error may be detected until the progression has made the mishearing so great that there is no way of escaping detection.

No tuner who wishes to do his work well should trust himself on the thin ice of octave tuning without tests, not alone using the tests of fourths and fifths but minor thirds and major sixths, 10ths and 17ths.

*****

That Nels C. Boe was quite a guy. I wonder if he ever read the "On Pitch" series? The next item appeared in the January 1925 issue.

Dear Sir:

Please let me know the "formula" for tuning by thirds and sixths. In tuning this way I mainly would like to know if the thirds and sixths are widened or narrowed, and by how many beats per second. From one source I read that the thirds should have eight beats per second and in another place nine per second. Should not the thirds increase slightly as they ascend in the temperament octave, and how much?

C. Lou Tandy; Detroit, MI

There are so many different "for-

mulas" or "ways around" to divide the temperament octave into 12 equally-distant semitones that we shall not attempt to give you any special method, or formula, because, first, we are not a sixth and third tuner, and therefore cannot from experience recommend any special system to be preferred to another; and second, if we suggest one method someone is sure to come back at us and say "That is not a good one, mine is better." Every tuner believes he has the best temperament.

*****

This man truly saw the future. It was gratifying to see that he too, occasionally, ducked a hard question.

Swan Song

As I wind down my final article, I sit and wonder if there is anything I forgot to say. Well, if so, it's too late now. In the letter from H. E. Sisson, he states, "as it was not given me in the beginning...." I sometimes wonder how many struggle to understand the things which I have written, because they have not started at the beginning, building the necessary foundation, upon which further knowledge may stand.

I think back over a decade ago, attending a class given by Chris Robinson at the Washington D.C. national convention. I was young in the business, and was busy wading through a lengthy discussion on grand regulation in the *Journal*. I had no idea at the time who Chris Robinson, who is now a good personal friend, even was. Entering the class, I did not have a comfortable knowledge of grand regulation. Three hours later, I emerged with more knowledge than I had acquired in years of reading. Why? Because rather than teaching arbitrary specifications, Chris taught how the action worked, and why. It became evident that the specifications were simply a measurable representation of the minimum and maximum tolerances for each of the many operations involved. Knowing the specifications is meaningless without knowing how the action functions. I left the class knowing how to regulate any action, because for the first time, I understood how the action functioned.

It has been my aim over these many months to answer your questions in such a way that you might better understand the "hows and whys" of the problems encountered in tuning. While it is true that one may tune a piano while knowing nothing of inharmonicity, coincident partials, octave tests, etc., there is a security which comes from the knowledge and understanding of these basic tuning elements. Though some of the material I discussed is new due to the technological advances of our day, as we see from the above, much of the information presented was the same as that which appeared in 1925.

There have been many positive aspects of this job. I have received many letters and phone calls of encouragement from highly respected individuals in this industry. What a compliment it was to receive a letter from Dr. Earl Kent requesting permission to use some of the material which I had printed in one of his upcoming presentations. In addition, after some 60 articles, I feel confident that I can type the word "inharminicity" oops "inharmonicity" faster than any one else in the guild.

May I thank those who have written regular contributions for me or provided technical data or information. They include, among others, Dr. Albert Sanderson, Jim Coleman, Sr., Michael Travis, Michael Kimbell, Charlie Huether, Ernie Juhn, and my dear friend Norman Neblett. Thanks also to each of you who have sent in a question or comment for publication. I determined at the onset that the direction for this column would be guided by the questions and comments of the readers, and this has been my policy to the end.

I would also like to thank those of the *Journal* staff who I have worked with over the years, including Jack Krefting who initially entrusted me with the title of Assistant Technical Editor over tuning; Susan Graham who was Technical Editor while I was Tuning Editor; and Larry Goldsmith, Editor; and Lisa Smith, Assistant Editor, two very competent, cooperative, and patient individuals.

It has been my pleasure to be of service to the Piano Technicians Guild in the capacity of Tuning Editor. This marks the end of the Tuning Up column which has run continuously for the past five years.

Until next time.
Rick Baldassin

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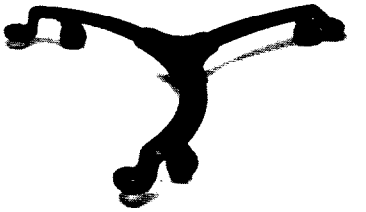

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PRACTICALLY SPEAKING

Replacing Upright Hammer Butt And Catcher Coverings

Bill Spurlock, RTT
Sacramento Valley Chapter

The hammer butt in the vertical piano, like the knuckle in a grand, is critical to proper action operation. It is the focus of the force that drives the hammer toward the string, so it must be covered with a material that is durable yet soft enough to operate quietly. During escapement the butt material must provide enough friction that the jack will not skip out too soon, while being smooth enough to allow the jack to easily slip back under the butt as the key is released. Also, the profile of the underside of the hammer butt is important to the feel and efficiency of the action. The purpose of this article is to describe some common action problems caused by hammer butt covering materials, and to suggest efficient methods of repair.

Reasons To Replace Hammer Butt Coverings

There are several situations in which we might want to replace the hammer butt and catcher covering material. One, of course, is where the original material is simply worn out. On older uprights the catcher leather is often worn down to the glue, causing poor checking. Here the need for replacement is obvious. What might not be so obvious is deterioration of action performance due to other wear in the butt. By the time the catcher leather is worn the hammer butt leather will also be quite worn and its original profile indented from years of pounding by the jack. While the leather may still appear intact, the feel of the action (even when regulated) will be compromised because of the worn butt profile. With new parts, escapement occurs crisply in the last part of the key stroke. However, when the profile of the butt becomes very worn the jack must rotate further from the butt to disengage, so escapement must start earlier in the key stroke. In fact, in one experiment I found that with a worn hammer butt (but with let-off correctly set), the jack escapement began at 54% of key dip. This was just about the time the damper was also lifting, so the action felt mushy. Power was also decreased because the regulating button was prying the jack out from under the hammer butt for almost the entire second half of the key stroke. However, with a new hammer butt on the action, escapement did not begin until 75% of key dip. Thus more power was delivered to the hammer butt, and escapement occurred quickly at the end of the key stroke with no danger of a double-striking or blubbering hammer. (See my article on vertical regulation in the November 1989 *Journal* for a thorough discussion of this problem.)

I dwell on this point because I feel it is often overlooked during hammer replacement jobs. My feeling is that it is a waste of money to put new hammers onto old hammer butts if the action will not regulate properly and feel right. To give the customer the full benefit of money spent on new hammers we must consider the condition of the whole action and sometimes include butt repair or replacement in the job. Perhaps one reason butts are often overlooked is the scarcity of quality replacement parts for all styles, which gets us back to the reason for this article. Of course, in deciding upon repair versus replacement of worn parts you must weigh the cost of doing all of the necessary work to the old parts (re-pinning, possible shank replacement, replacement of spring punchings and bridle straps, and repair of loose glue joints) to the availability and quality of new parts or the effort required to adapt new parts to an old action.

A second instance in which we might want to replace butt covering material is when the original material was felt, rather than leather. Felt butt coverings are often associated with "sticking keys," meaning the jacks do not return under the butts reliably upon key release. This problem may not be entirely due to the use of felt, since felt is often used as a substitute for leather on less expensive pianos which may have other contributing factors (compact actions, rough jack tops, short angled keys, no leads in keys). However, in some cases a quality studio-size upright with light wear will suffer poor repetition and a poor action feel due to felt butt coverings, or the combination of felt and lack of key leads. If, after experimenting on a few notes, you decide that switching to leather will cure the problem, it is certainly feasible to do this job. Here the original felt catcher material can be left in place if it doesn't show any wear.

A third instance where butt recovering is appropriate is where the original material was a synthetic which deteriorated over the years. "Artificial leather" is commonly used on many vertical pianos today. Known by the name "Escain," it looks and feels so much like leather it's hard to tell from the real thing. While this modern material promises to hold up over time, some earlier versions did not. One type became gummy and tore loose from the butts. Another type turned rock-hard causing action clicks, a scraping sound on jack return, and poor checking.

The clicking can be difficult to diagnose the first time you encounter it because it sounds a lot like a loose hammer head. The material will look like

ordinary tan leather and usually not show any wear; however if you poke it with a screwdriver blade you will immediately feel the hardness. The catcher will also look green and glazed from slipping on the backcheck felt. This problem usually occurs when the piano is five to 10 years old. Therefore the instrument is most often in good condition otherwise, so that butt covering replacement is feasible.

If the instrument is still within the warranty period and owned by the original purchaser, there may be some assistance available from the manufacturer. Obtain date of purchase information, model and serial numbers and call the manufacturer's technical representative for details.

Methods Of Butt Covering Replacement

The thought of removing and replacing 176 small pieces of material on an upright action may seem so daunting that many will avoid the job entirely. However with the right techniques and, more importantly, the right attitude, this can be a pleasant and profitable job. The work is clean and requires only simple hand tools; I can think of a lot worse ways to spend an afternoon at the work bench.

As with any other repetitive operation, it is most efficient to work in assembly line fashion to minimize redundant handling of parts and tools. The parts being worked on should be fastened down, rather than held in the hand, so both of your hands are free to do the work. At this point I have to say my usual method for recovering hammer butts involves removing all of the butt assemblies from the action and placing groups of 15 at a time into a holder where they can be easily worked on. I get good results with this method, and the work goes fairly fast. However, in preparation for this article I happened to be talking to a manufacturer's technical representative who suggested an alternative method which allows the parts to be worked on while still mounted to the action rail. After trying it I found this method to be even easier and more efficient, so I will describe it here. Besides that, it saves me from having to draw diagrams of my holding fixture!

I suggest the following procedure.

1. With the action in a cradle and on the bench, unhook all bridle straps.

2. Mix up a soaking solution of water and wallpaper remover and apply it to the catcher coverings only. Place a rag over the regulating rail to shield it and the jacks from drips, and apply with a brush as you hold groups of hammers forward against the spring rail. Once all catchers are wet, apply a second coat. (The wallpaper remover is just a wetting agent. The mixing ratio is not important — just follow the instructions on the bottle).

3. Remove the hammer rest rail. On most actions the rail has four hangers that pivot in the action brackets. One of the hangers will point toward the bass (usually the one on the bass end) and the others will point toward the treble. By grabbing the bass hanger with pliers and bending it away from the action bracket, you will be able to slide the other hangers out of their brackets and lift the rail off (sometimes you will have to first remove the hammer butt adjacent to one or two brackets to provide clearance for the hanger to slide out). Alternatively, you can remove all but one of the screws that hold the bass action bracket to the action rail and swing the bracket off the hanger.

4. Remove the spring rail.

5. Number and remove the damper levers. Place the screws in a rack to keep them in order.

6. Now the hammer and butt assemblies can be tipped forward as shown in figure 1. With the action and cradle sitting at a comfortable height, test the catcher material to see whether it will peel off easily or if it needs more time to soak. Don't try to remove the catcher skins until they are well loosened, since straining can damage the butt flange pinning. Apply more soaking solution as needed until you can lift one edge with a knife and peel them off easily.

7. Meanwhile, using a sharp 3/8" wide chisel, cut the butt coverings loose at their top end. Hold onto each catcher to support the pinning while you pry the edge of the material loose from the hammer butt and follow with a crosswise slice to remove any remaining leather from the glue joint. It is not necessary to remove all traces of the old glue.

8. Remove the butt felts by scraping or slicing off with the chisel. Be careful not to strain the wood where the butt felt is glued, since it is fragile and can break off easily. Although it is possible to do this job without removing the old butt felts, there is the likelihood that some of the felts will be contaminated with glue during the process. Discovering the resulting clicks after the action is all assembled is no fun at all (trust me), so I feel it is easier and safer to just remove them and replace with new butt felts as part of the job.

9. Test to see whether the old butt material will pull out of the slot at the lower ends. If not, break this lower glue joint first by inserting a thin knife blade down into the slot alongside the mate-

figure 1: preparing action for hammer butt recovering

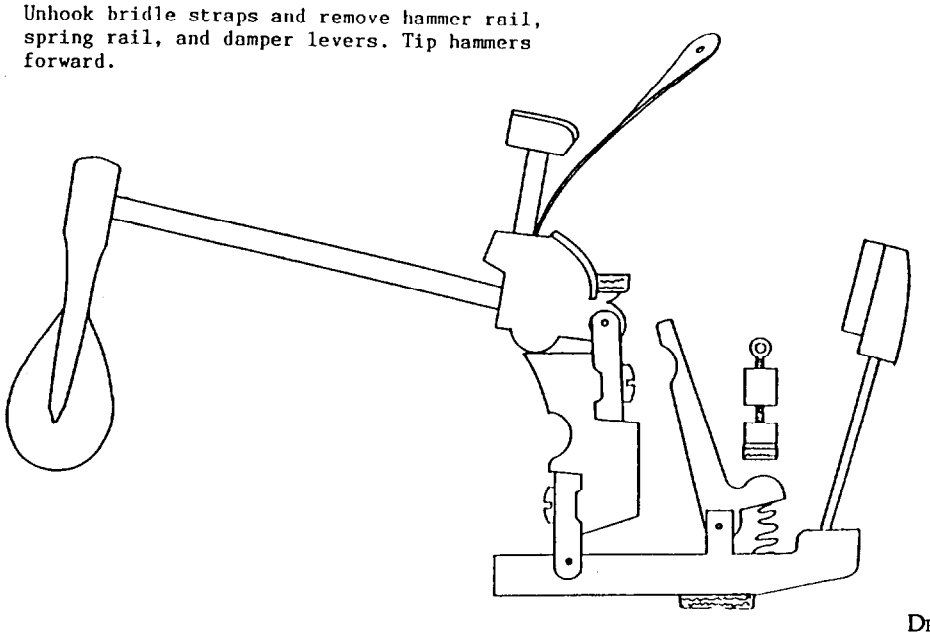
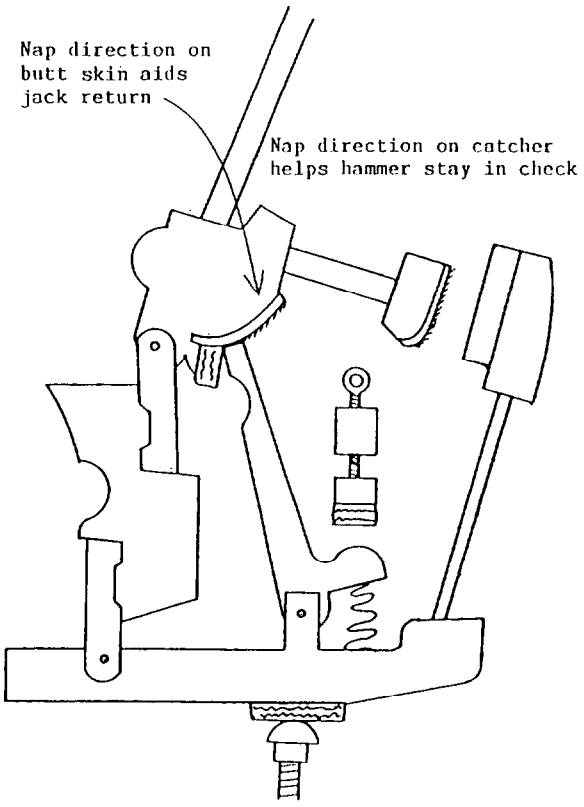


figure 2: proper nap direction of butt leather



rial; it should then pull out easily.

10. Clean out the slots using a fine-toothed sabre saw blade mounted to a handle or held with vise grips. A hack saw blade broken off, so the teeth are exposed all the way to the end, also works well.

11. Remove the pre-soaked catcher coverings if you have not already, and lightly scrape the surface clean. It is not necessary to remove all of the old glue residue as long as the surface is reasonably smooth.

12. If you are working on an old upright, the bushing cloth under the butt covering may be compacted or moth-eaten and require replacement in order to restore the original butt profile. This can be glued on in continuous strips spanning several butts at a time, and trimmed flush with the sides of each butt later, after the butt leather is glued back on. Glue the bushing cloth in the same manner as was originally done. Normally the bottom piece (which takes the driving force of the jack) is glued only at the edge closest to the centerpin.

13. Prepare your new butt covering material. If you plan to use leather, it should be uniform in thickness with a fine nap. Good quality buckskin as sold by many of the suppliers is excellent for this purpose. It can be cut into strips using an Olfa Rotary Cutter or equivalent (available from fabric stores). The new leather should be installed with the nap direction as shown in figure 2; that is, with the nap resisting jack escapement but favoring jack return. On the catchers, the nap direction is less important but is normally installed as shown to help prevent the catcher from bouncing out of check. You do not want to have to test the nap on each piece of leather as you install it, so it is best to mark the strips before cutting them into pieces by drawing a line along one edge to denote the right or left edge.

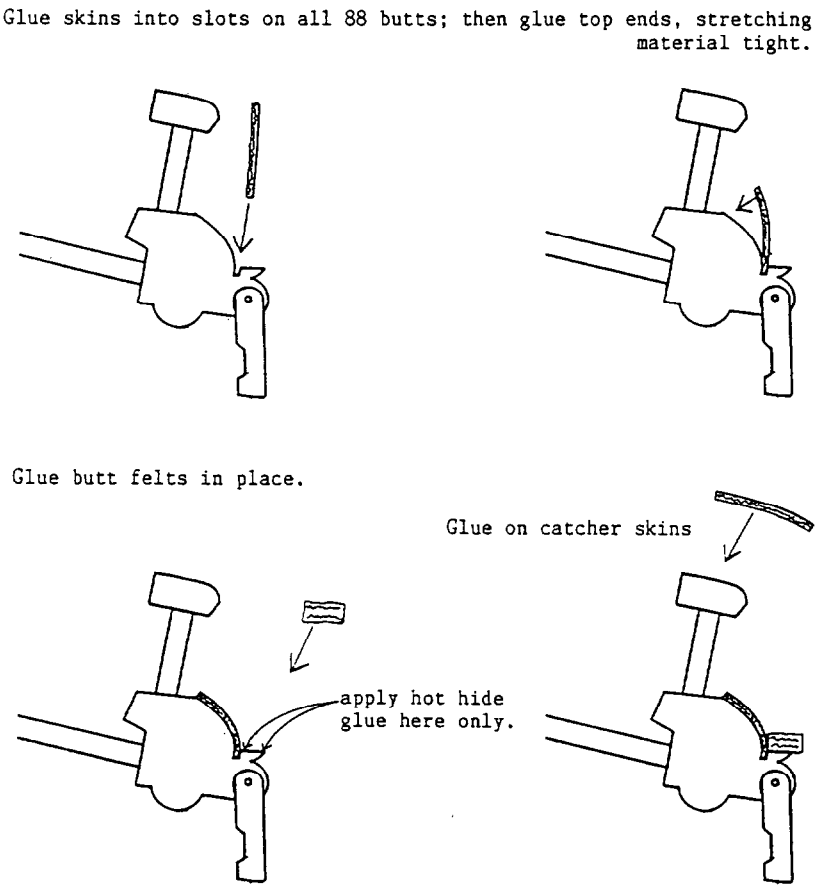
If you are replacing deteriorated synthetic material on a modern piano, the manufacturer can supply pre-cut pieces of the modern synthetic, Escain.

Installing The New Material

14. It is most convenient to use cyanoacrylate (CA) glue for attaching the new material because it grabs quickly and little clamping is required. Obtain some in a bottle with a small tip, or one fitted with a small Teflon tubing extension. You need the *medium* viscosity type which is intended for porous materials. Only hot hide glue should be used for the butt felt, however, since CA glue will soak into felt and harden it.

With your action at a convenient height and your pre-cut material, CA glue, hot hide glue and butt felts all at hand, you are ready to begin installing the new material (be sure to have some de-bonder handy when using CA glue). The first step will be to glue one end of all skins into the slots in the butts. See figure 3. Using the small tip, apply CA glue to the slots of six or eight hammer butts. Be fairly generous with the glue but do not allow it to run down the sides of the butts. Avoid getting glue on the butt leather under-felt. Insert a butt skin into each glued slot, pushing them fully into place with a knife point as necessary. Now comes the most important step: wait about one minute, then pull on each glued skin to test your gluing job. If any come loose, examine the glue joint to find out why. Is the glue not yet

figure 3: installing new hammer butt and catcher material



hardened? If not, test again and wait longer or use a small amount of accelerator. Is the joint glue-starved? If so, use more glue or work with fewer butts at a time so the glue cannot soak into the butt before the leather is inserted. In other words, take the time to test your results and adjust your technique as necessary so you will be assured of good results. Never assume your work is good if you haven't tested it.

This job goes especially well if two people work together; one can apply glue while the other follows immediately behind inserting the leather. Maybe your spouse or significant other can help you. After all, the family that uses CA glue together — sticks together!

15. After all butt skins are glued at the slot end, go back and glue their top ends. Work as before, applying CA glue to several butts, then attaching the material. If you are working alone, you can apply glue to four butts, then press and hold the material in place with four fingers of one hand while applying glue to the next four butts with the other. When gluing the top end of the butt skins you should press firmly near the slot end, then slide your fingertip upward to the top end; this will stretch the material tight. As before, stop and test your work after the first few and adjust your technique as necessary.

16. Next, glue on the new catcher skins. Here the skin is glued on in one step, so apply a thin even coat of glue to the catcher surface using a larger tip on the glue bottle. Each skin will have to be pressed and held to the curved catcher until the glue grabs, but this usually takes only a few seconds. In fact, the glue may grab almost instantly so be careful to line up the material neatly the first time.

17. Now you are ready to glue on the new butt felts. These come in two thicknesses; make sure to match the originals. Extend the gelling time of your hot hide glue by adding urea if necessary, so you can apply glue to several butts at once and still have time to press the felts in place before the glue gels. Be very careful about the amount and placement of the glue; there should not be any glue between the butt felt and butt skin since this could cause a click if the jack were to contact it.

18. If you are working on an old upright action you might remove the butts from the rail for re-pinning at this point. However, if the only job to be done was butt covering replacement you can now reassemble the action, leaving the dampers off for the moment.

19. In most cases you will want to file the hammers before re-installing the action. Even if wear is light, filing will remove any string grooves that would otherwise cause uneven tone after adjusting hammer to string spacing.

20. Once the hammers are filed, reinstall the dampers. It is good insurance against future squeaks to apply a trace of VJ Lube to the top of each damper spring as you go (rubbing each spring groove with a soft graphite pencil also works well for those levers having felt spring punchings).

21. Tighten all action screws.

22. Replace the action in the piano and adjust the regulation. In the case of the modern piano in which the only reason for the work was to replace defective synthetic or felt material, a minor regulation will usually suffice (to correct those adjustments which were affected by the change in butt covering). This will consist of spacing hammers to strings, adjusting lost motion, let-off, checking and possibly damper spoons.

I hope the procedure described here encourages others to try this job the next time it is encountered, especially if it has looked too tedious to attempt before. With the right technique, replacement of hammer butt coverings can be at least as much fun as setting unisons — and besides, you can listen to the radio while you do it.

Next month I will present plans for a device you can use to quickly clean hardware, keys, and other parts. ≣

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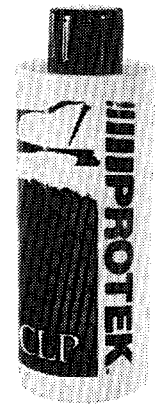

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Hire An Assistant And Increase Your Hourly Earnings

Nick Gravagne, RTT
New Mexico Chapter

Shop assistants are as important to the piano rebuilder as saw horses are to the carpenter. It's possible to complete the job without them, but far less efficient or profitable. Today's rebuilder heeds it well; whether his shop is "big-time" or "small-time" — unfortunate terms when considering the positive or negative connotations — unsung pianowrights of every kind and comportment, be they simply an extra pair of leathery hands, or be they semi-skilled, or have they the sharp eye and steady pull of the craftsman, are scurrying around piano shops across America.

Those obvious jobs where assistants are set to work, especially in the early stages of employment, generally constitute simple and repetitive tasks, also known as grunt jobs. Such work includes sanding, key leveling and minor or rough-in action regulation, scrubbing piano plates, and so on. It makes no sense for you, a highly-skilled craftsman with a voicing job awaiting your trained ears, to allow the needles to lie idle in order to pick up an ammonia-soaked rag. Of course, the more skilled and useful the shop assistant, the more pay he or she should receive.

The Minimum Two-Man Crew

In today's industry no area of manufacture has escaped the omniscient scrutiny of those algebra-fixation managers and engineers. And worker productivity and efficiency remain as ever a fertile ground for investigation. What has surfaced in recent decades is a slim crop of algebraic formulas which can compute fairly closely the number of hours or days required for one or several workers to complete a task. For example, if, given certain skills, Amy working alone needs 15 days to complete a job, and Anthony needs 30, it can be shown that working together the two require only 10 days. No surprise, then, that rarely do we see working crews of fewer than two people. Now clearly the implications are that, if the business-minded rebuilder, to whom time is the greatest enemy of productivity and profitability, is to complete a quality rebuilding project in the least number of hours possible, he needs help. Now in a general way this may all seem obvious, but let's reinforce the point with numbers.

The Most Important Income Consideration

It was mentioned in a past article that the more hours put in by shop assistants on a rebuild, the more *per hour* will be earned by the owner who is also working on the project. Is this true? Refer to Table 1, which is a computer generated spreadsheet designed to show income possibilities relative to time on the job for the owner in comparison to time on the job with employee assistance. The column headings, such as *job fee* or *Owner's Hourly Wage* are self evident as are the dollar or hour amounts under each heading. Notice in row number one that the *job fee* is priced arbitrarily at $14,250 for an all-out rebuild which includes new soundboard/

Table 1

	Job Fee	Total Est. Hours Required To Complete Job	Owner's Hours On Job	Assistant's Hours On Job	Owner's Hourly Wage	Owner's Total Wage	Assistant's Total Wage @ $11/hr	Parts & Materials
Row 1	14,250	300	300	-0-	42.50	12.750	-0-	1,500
Row 2	14,250	300	100	200	105.50	10,550	2,200	1,500

Table 2

							@ $5/hr	
	14,250	300	220	80	56.14	12,350	400	1,500

Table 3

							@ $6.50/hr	
	11,500	300	200	100	46.75	9,350	650	1,500

bridges, pinblock, strings, new action, tunings and voicing, and refinishing. A diligent and reasonably efficient rebuilder working alone might finish the entire job in 300 hours, or 7.5 weeks. If direct material and parts costs of $1,500 are backed out, the rebuilder will pocket $12,750 for his laboring effort, or $42. 50 per hour; and if an honest 40 hours per week of direct work were poured into the project, his gross weekly income would be $1,700. From this gross all other business and personal expenses must be paid.

Now compare row number two. Imagine that a few years have passed and our rebuilder/entrepreneur has hired and trained a person of native ability and of strong sympathy for piano shop work. Starting at $4.50/hour, the hired hand has proved him or herself as the right stuff and is now earning $11/ hour. The owner is now working 100 hours engaged in the most specialized tasks, i.e., the owner has become a specialized consultant in his or her business, while the assistant is working 200 hours in general, or semi-skilled, or limited highly skilled areas. Together (although not always in the shop at the same time) they will meet the 300 total hours (actually fewer according to paragraph three) required to complete the job; but something has changed. The owner's total earnings for that job have necessarily dropped to $10,550 since the assistant now has claim to $2,200. But notice the huge improvement in the *Owner's Hourly Wage* of $105.50/hour. In addition, the owner only had to contribute 100 hours of shop time, or 2.5 weeks, in order to earn the $10,550. This means that large amounts of time have been made available to tune pianos, or estimate new jobs, or handle business correspondence, or take a vacation. Said another way, every hour worked by shop assistants is an hour made available to the owner to earn additional income either from the shop or the field, or to maintain the business through non-income producing, but essential activities.

The Part-Time Assistant For The Part-Time Rebuilder

But most tuner/rebuilders who restore in part or in full, say, two pianos a year along with a handful of action overhauls, do not have enough shop work to maintain a skilled work force of one or more persons. This being the case, the work force will have to be part-time, general in nature and semi-skilled. It is also possible here to have on call (with reasonable notice) a "focused" part-time work force which is highly skilled but limited to selected aspects of the project. An example would be calling in another piano technician to fit a pinblock, or string the piano, voice, etc. Or, perhaps, certain non-technicians, but specialists in their own right, might be called in to do specialized sanding, or soundboard joinery work. Let's take a look at Table 2 where a part-time, semi-skilled and general worker has relieved some of the burden by working 80 hours (@ $5/hour) of a 300-hour rebuild. In this case the owner, contributing 220 hours of the total work has grossed $12,350 while the assistant has earned $400. But here again, the *Owner's Hourly Wages* have risen to $56.14, which is a 32% increase in earnings per hour over working alone and unassisted. Is the right employee a good investment? Undoubtedly.

Competitive Pricing

But there is a subtler aspect of business which necessitates the use of assistants and employees, and that is the nature of competitive pricing. Although some of us boast eye-popping prices for our work, and claim that, due to a sterling reputation founded on exacting standards, those fees are not only justified but that a backlog of rebuilding orders serve to prove the old master's trinity — highest quality, highest prices, plenty of work. Now although there is something to be said for all this there is no escaping for most of us the possibility of either pricing oneself out of the market, or not being competitive in offering an identical product at a price which is reasonably similar to other competent rebuilders. Shop assistants are one big way to control pricing structures for piano shop work.

Suppose that through time and investigation, and through experience and an understanding of his or her market area, through a feeling for the economics and demographics of that area, it is determined that an all-out rebuild will never fetch more than $11,500? Well, it still takes 300 hours to do the job. But working alone, and backing out costs for materials, the rebuilder's gross earning will now settle at $10,000, and the gross hourly wage will drop to $33.33. (Remember, the gross hourly wage must support all other business and personal expenses). Thus, if an analysis of business and personal expenses indicates that a minimum hourly earning of, say, about $47 is required by the owner to stay in business and to purchase a decent quality of life, then clearly something must be done to boost that hourly earning. Assuming that other aspects of the business are not wasteful or grossly inefficient, the owner's hourly earning can only be increased by hiring and probably training a part-time assistant. Table 3 details the impact of such a move; notice that the assistant's wage is set at $6.50/hour, but whether more or less the principle still holds. At any rate, the figures show that in order for the owner to gross $47/hour the assistant must work 100 hours of a 300-hour job, while the owner picks up the remaining 200 hours. Now, those of you with rebuilding experience — can you think of enough tasks for your helper equal to 100 hours? I'm sure you can. Moreover, if that helper puts in *more* than 100 hours, and even with increased pay for increased skill and responsibility, the owner's hourly earning will increase, while at the same time more owner hours will be freed for other pursuits. Not a bad deal.

The System

It seems ironic that in hiring personnel, hence in spending money, that a business owner stands to make *more* money than if he or she works alone. Also, isn't it interesting that in order to lower the selling price, that is, either to be more competitive or to increase the shop volume of work, it also becomes necessary to hire workers. There are other economic subtleties here, but suffice it to say that these economic natural laws are but a small part of the canon by which Western-style industry avows obeisance. And chiseled high atop its stoney book of laws is the commandment *Thou Shalt Employ Workers*. The system actually demands it, and the forces to hire, whether perceived and analyzed or not, are so relentless and compelling that few entrepreneurs can afford the apostasy of working in solitary confinement.

Working The Formula

Now, how were the computed values found in the *Tables* derived?

Owner's Hourly Wage

If working alone, compute: (Job Fee less Materials) divided by Total Hours Estimated to do job.

If assisted, compute: (Job Fee less Materials and less Assistant's Total Wage) divided by Owner's Hours spent on the job.

Owner's Total Wage

Compute: Owner's Hours on the job multiplied by Owner's Hourly Wage.

Assistant's Total Wage

Compute: Actual or estimated assistant's hours on the job multiplied by his hourly rate of pay.

Unless you own a computer and enjoy spending hours crunching out spreadsheet programs, you will have to work through the above simple formulas in a trial-and-error fashion in order to determine various employer-to-employee hours ratios, and their impact on the *Owner's Hourly Wage*. In my own practice, and at the start of every job, I choose an hourly wage for myself, and then find the appropriate employer-to-employee ratio necessary to meet it. After completing the job, and having kept reasonable records as to hours spent by both me and my assistants, a comparison is made of the theoretical job with the actual one. This tells me at least two things: 1. Whether my pricing structures are reasonable relative to the time mix that I and my helpers ended up with; If, in order to meet my chosen hourly wage, more hours are required of my assistants, are they skilled enough, or available enough to oblige? But whatever the analysis and interpretation, I at least have before me financial and records-keeping data on which to make informed decisions.

A Final Word On Employees

I used to work for a band leader who once a year on Valentines Day would treat the waitresses in our club to silvery boxes of chocolates. While the waitresses were beaming and discussing the nutritional and spiritual merits of chocolate, the band leader would turn to me, place his finger aside his nose, wink, and whisper, "It's good business." Probably so — but with the attendant rush of a bloodless Polar wind. Nobody likes to be used, or exploited, or made a fool of; especially when artfully done with a smile, and with an extended right hand, while the other hand, liberal and hidden, holds a polished steel shaft.

Shop assistants at all levels of skill and usefulness need to feel respected by the boss and co-workers alike. And they also need to know that their productivity is directly linked to their pay; that as skills improve they can expect correlative pay raises. Nothing is more discouraging to a worker than to realize that as his skills and usefulness have increased in value, his pay has not. Such is the greenhouse of resentment. The usual boss-to-employee relationship regarding pay is adversarial: the boss hoping to pay the least amount possible, and the worker hoping for the opposite. Eventually the worker will approach the boss with hat in hand; and if at the end of their meeting that hat remains empty, it won't be long before the shop takes on a likewise hollow aspect. ≣

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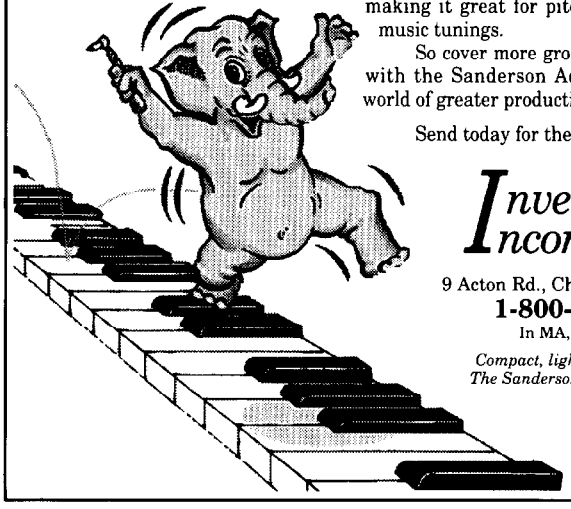

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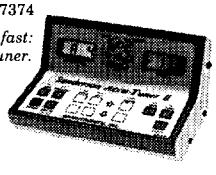

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Humidity Within The Home

Bob Mair
Western Carolinas Chapter

(Editor's Note: Before you dismiss the following article as being inappropriate for publication in December, your attention is called to this line from the article's cover letter: "...It starts off looking at summer humidity levels, but its real importance lies in its implication and description of what takes place during the lower humidity levels of winter in a heated environment." -jh-)

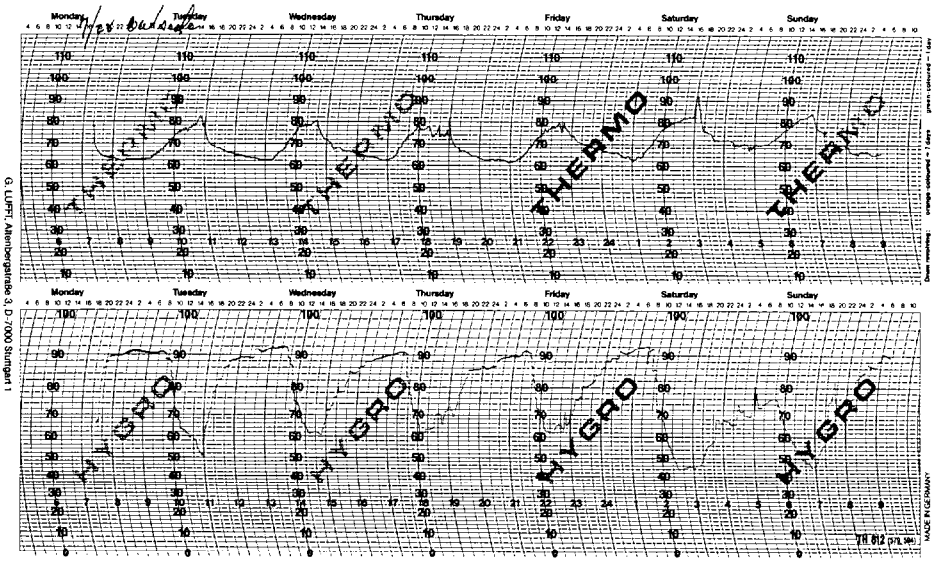
This article is important in the building of your knowledge of relative humidity within the home.

The humidity outside the house may vary considerably during the course of 24 hours, but the variation in the house is restrained by the dampening effect of the building structure itself. Put another way, the building will absorb moisture during periods of high outside humidity and will give off moisture during periods of lower outside humidity. It will try to equalize with the outside humidity level. Outside swings of 30% RH are reduced inside to swings of 10% to 20%.

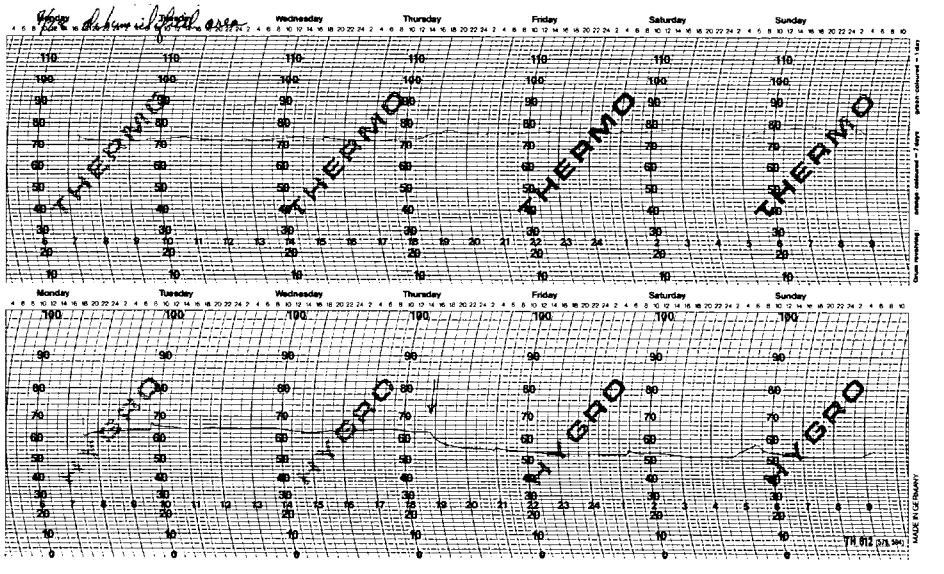
Graphs 1 shows this effect. The top one shows the outside temperature and humidity on my deck in Asheville, NC, during the week beginning July 28, 1991. The bottom shows the inside temperature and humidity in the dining area about 15 feet away. The door between the two areas was open but there was generally not great air movement. Compare the humidity fluctuations between the two charts.

Numerical differences between the highs and lows for each date are shown in Table 1.

Graph 1



Graph 2



These high/low swing averages are only to provide a grasp of the magnitude of the difference. They are dangerous because they level the highs and lows to one number. Please note, and this is important, that despite the dampening effect of the building, there was a 27-point swing on Friday and this is what the piano has to cope with. That, and a substantially higher than desired overall humidity level throughout the entire period. The average inside humidity is essentially equal to the very high average outside humidity at slightly over 70% RH.

The next point, because of its magnitude has had considerable impact on my thinking, is that despite providing extremely large water removal capacity to a section of my home, I was not able to drop the RH in this area below 52%. Thermohygrograph chart 3 shows this.

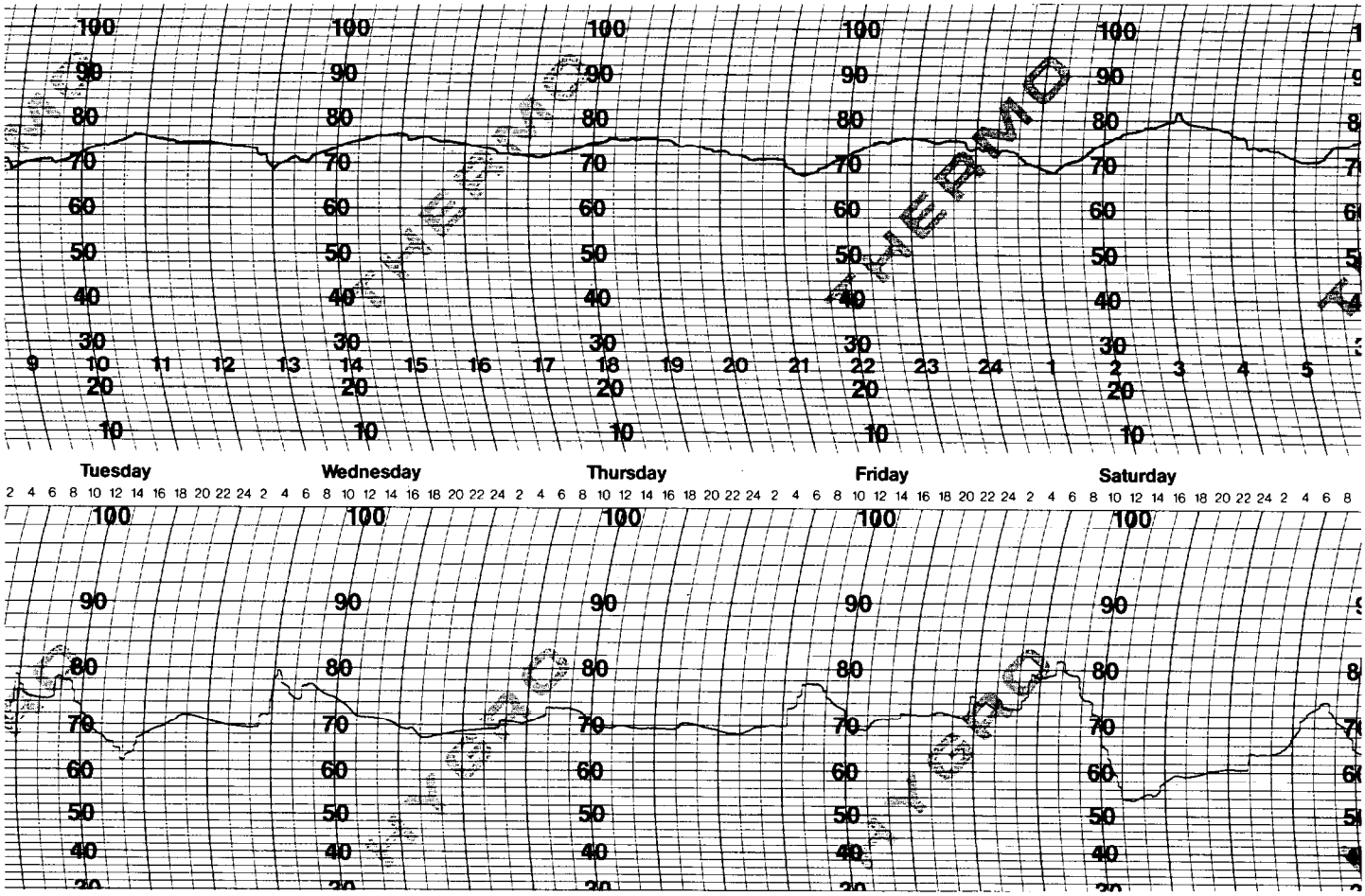
The area of my home used for this experiment was sealed off from all ex-

Table 1: numerical differences between highs and lows for each date

	Outside				Inside			
	hi	*low*	*dif.*	*avg.*	*hi*	*low*	*dif.*	*avg.*
MON	91	51	40	71	79	62	17	71
TUE	92	62	31	76	79	67	12	74
WED	91	62	29	76	73	68	5	71
THU	91	62	29	76	79	69	8	74
FRI	92	44	48	68	81	54	27	68
SAT	80	45	35	63	75	55	20	65
SUN	90	62	28	76	80	66	14	73

Average high/low swing outside — 34.1; Average high/low swing inside — 14.7

Graph 3



ternal sources of air. Heating vents were closed, cold air returns were sealed, and doors were shut and sealed. During the first three days of the week a single room dehumidifier with a 14 pint/day capacity was utilized. Mid-week a 25 pint/day capacity dehumidifier was added. During this second phase the amount of water condensed and emptied was measured at 3 1/2 gallons per day. This did not vary significantly from day to day. The point of this is that there were 3 1/2 gallons of water coming through the walls and ceiling to this area each day. That is a lot of water. Since the opposite side of some of the wall area was exposed to outside humidity and temperatures and since some saw inside environments, it is difficult to provide exact temperature and humidity differentials between the two areas, but it's safe to say that the humidity differential was at least 20%. This is important in periods of high humidity if one is relying on room control to maintain low (42% RH) humidity levels.

It is more important though, to recognize that this phenomenon works

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both ways and that during the winter, if room control of humidity is used to maintain the desired level (above 40%), there will be an equalization of moisture through the walls. As long as outside temperatures are sufficiently high to keep this water transmission through the wall from freezing within the wall, there is no danger of structural damage to the wall. However, if the outside temperature is such that freezing can take place within the wall, structural damage will occur. It is this that the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) warn about with the placards on furnace and room humidity units that advise turning the setting to reduced levels during periods of low outside temperatures. These levels are substantially below 40%. ASHRAE advises that this transmission phenomenon is not just one of the equalization of humidities, but is the equalization of vapor pressures which brings temperature into play as well.

The points that are important from this study are: 1. Building structure buffering reduces humidity highs and raises humidity lows; 2. Building structure buffering does not eliminate swings; 3. Building structure does not reduce overall humidity levels. The average inside level is the same as that outside; 4. The amount of water moving between areas of unequal humidity can be enormous despite the fact that these areas are separated by dense building materials that one would expect to be almost impervious to water transfer. ≡

Statement of Ownership, Management and Circulation
(Required by 39 U.S.C. 3685)

1A. *Title of Publication:* The Piano Technicians Journal
1B. *Publication No.:* 00319562
2. *Date of Filing:* October 17, 1991
3. *Frequency of Issue:* Monthly
3A. *No. of Issues Published Annually:* 12
3B. *Annual Subscription Price:* $85
4. *Complete Mailing Address of Known Office of Publication (Street, City, County, State and Zip+4 Code) (Not printers):* The Piano Technicians Guild, Inc., 4510 Belleview, St. 100, Kansas City, Jackson County, MO 64111-3506
5. *Complete Mailing Address of the Headquarters of General Business Offices of the Publisher (not printer):* The Piano Technicians Guild, Inc., 4510 Belleview, St. 100, Kansas City, Jackson County, MO 64111-3506
6. *Full Names and Complete Mailing Address of publisher, Editor, and Managing Editor (This item MUST NOT be blank)*
Publisher (Name and Complete Mailing Address: Larry Goldsmith, Executive Director, 4510 Belleview, St. 100, Kansas City, MO 64111-3506
Editor (Name and Complete Mailing Address): James Harvey, 205 Parker Ave., Greenwood, SC 29649
Managing Editor (Name and Complete Mailing Address): Larry Goldsmith, Executive Director, 4510 Belleview, St. 100, Kansas City, MO 64111-3506
7. *Owner (Full Name):* The Piano Technicians Guild, Inc.
Complete Mailing Address: 4510 Belleview, St. 100, Kansas City, Jackson County, MO 64111-3506
8. *Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities (If there are none, so state):* None
9. *For Completion by Nonprofit Organizations Authorized to Mail at Special Rates (DMM Section 424.12 only): The purpose, function and non-profit status of this organization and the exempt status for Federal income tax purposes:* Has Not Changed During Preceding 12 Months
10. *Extent and Nature of Circulation: Average No. Copies Each Issue During Preceding 12 Months/ Actual No. Copies of Single Issue Published Nearest to Filing Date*
A. *Total No. Copies (Net Press Run):* 4,500/4,500
B. *Paid and/or Requested Circulation*
1. *Sales through dealers and carriers, street vendors and counter sales:* 0/0
2. *Mail Subscription (Paid and/or requested):* 4,026/4,041
C. *Total Paid and/or Requested Circulation (Sum of 10B1 and 10B2):* 4,026/4,041
D. *Free Distribution by Mail, Carrier, or Other Means Samples, Complimentary, and Other Free Copies:* 39/40
E. *Total Distribution (Sum of C and D):* 4,065/4,081
F. *Copies Not Distributed*
1. *Office use, left over, unaccounted, spoiled after printing):* 435/419
2. *Return from News Agents:* 0/0
G. *Total (Sum of E, F1 and 2 — should equal net press run shown in A:* 4,500/4,500
11. *I certify that the statements made by me above are correct and complete (Signed):* Larry Goldsmith, Publisher

Creating A Pricing Model For Your Business

Janet Leary, RTT
Cleveland, OH, Chapter

Year upon year we are faced with the never-ending scenario of rising prices in our workplace environment and in our personal lives. Each of us decides in our own way when it is time to raise prices for services. After instituting an increase, a price conscious client may notice the price rise and ask for substantiation.

This article will give you the basis for understanding how price increases are effected by the Consumer Price Index. Part 2 in next month's *Journal* will continue the discussion of pricing with a method for creating your own substantiated formula for price increases. Better understanding of the factors that contribute to price determination allows you to be more comfortable with increases or decreases, and also makes client explanation a simple task.

Basic to developing a pricing policy is knowing what your costs are, and allowing for a profit. If you're not allowing for a profit, you won't be in business very long. How do you know you've allowed for a profit? Simply add up all your expenses (this is the minimum amount you must earn to break even), then subtract that expense number from your gross income. What's left is net income or profit. Your tax return should be your basic guide.

CPI — An Indicator Of Rising Prices

As a quick and easy pricing policy model, you can tag your pricing policy to the consumer price index (CPI). This method assumes you are satisfied with your present price level, don't expect any major variations in your expenses, and want to simply be in the "ballpark" for covering costs of inflation.

What is the CPI? The CPI is the standard indicator of inflation in our economy. It is the average cost of a particular "market basket" of goods and services. The Bureau of Labor Statistics determines what the mythical "average" household consumes in a year. They visit stores across the U.S. and get price quotes every month for items within the "market basket" of goods and services. They adjust the quotes to account for changes in quantity and quality, and weight them according to the proportion of household expenditures each item represents. The sum of the price fluctuations is the CPI. Using the CPI method of pricing would allow you to increase your prices in line with what our government considers is an adequate index of inflation. If the CPI goes up five percent over the past year, you'd raise your prices five percent. Chart 1 breaks down the CPI increases or decreases for five items in the market basket. The numbers are reflected as a percentage change from the previous month.

Is The CPI An Adequate Indicator?

This CPI pricing method assumes that the cost of goods in the marketplace alone is an adequate indicator to tag your pricing policy to. There are several problems with this "quick and dirty" method: the CPI has flaws — such as sampling errors and biases in measuring spending patterns, the CPI does not account for tax increases, and the CPI market basket is not your businesses market basket of goods and services.

The CPI spending pattern biases can range as much as 10% between and within demographic groups. Simply put, different people spend their money on different mixes of goods and services. Two major areas of spending bias are health care costs and gasoline expense.

The sampling errors are thought to be in the neighborhood of plus or minus 2.5% over the monthly time frame, and .4% over longer periods of three months to a year. If you're going to use this method, use the quarterly or yearly measure — it'll reduce error. If you raise your prices in line with the CPI on a yearly or biannual-annual basis be aware that you're still losing ground as a result of the principal of compounding.

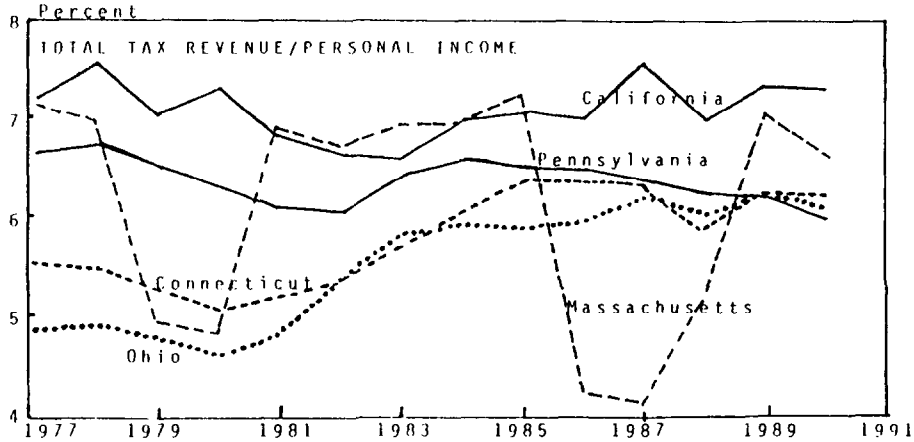
The CPI And Tax Increases

The CPI does not include tax increases in their market basket of goods and services. If the different layers of government — federal, state, and city

Chart 1: CPI increases or decreases for five items in the market basket

	food	housing	apparel	transportation	medical	all items
1990						
Aug.	0.3	0.7	0.1	1.8	0.9	0.8
Sept.	0.3	0.4	0.7	2.3	0.7	0.8
Oct.	0.3	0.3	-0.2	2.1	0.8	0.6
Nov.	0.4	0.2	-0.2	0.6	0.8	0.3
Dec.	0.1	0.2	0.5	0.5	0.7	0.3
1991						
Jan.	0.9	0.8	1.0	-1.2	0.6	0.4
Feb.	0.1	0.5	1.6	-1.1	0.7	0.2
Mar.	0.2	0.1	-1.2	-1.0	0.6	-0.1
Apr.	0.7	0.2	-0.2	-0.3	0.5	0.2
May	0.0	0.2	0.5	0.7	0.6	0.3
June	0.5	0.1	-0.1	0.2	0.6	0.2
July	-0.5	0.3	0.9	0.0	0.7	0.2
				12-month growth rate		
	3.5	3.9	3.6	4.2	8.6	4.4

(Source: Federal Reserve Bank of Cleveland, Economic Trends, 9/91)



(Source: Federal Reserve Bank of Cleveland, Economic Trends, 9/91)

raise taxes, the pegging price increased to the CPI is clearly not adequate. To remedy this problem the Bureau of Labor Statistics created another index that measures the changes in how much a household must earn before taxes to pay for those same goods and services in the CPI market basket. This index is called the TPI. In times of high inflation such as the late 1970s, tracking the CPI alone meant you were losing an average of six cents on every dollar earned. Between 1981-84 the TPI fell below the CPI, so pegging price increases to the TPI meant you were gaining ground instead of losing. In 1985, the TPI exceeded the CPI by 36.7 index points. 1985 was the first year in which the federal income tax brackets were indexed by the CPI. Using this method, the TPI was only 0.2 index points greater than the CPI.

The TPI is not an often published number, probably with good reason. Because of the economic downturn affecting each state with various degrees of severity, and our federal government's propensity to favor more state controlled and financed programs, the ratio between personal income and taxes varies from state to state. The following graph shows fluctuations of total tax revenue to personal income in five states. The tax revenue is that of state and local government finance — federal taxes are excluded in this graph. If a state or city has a budget crisis, we end up paying more in taxes. These taxes come from a variety of sources such as: personal income taxes, fuel, corporate, and sales.

The CPI Doesn't Track Business Expenses

The most important problem of pegging price increases to the CPI is that the CPI is not a tracker of our business expenses. It may be used as an indicator of inflation in a personal pricing model, but it is not complete for business use.

Employer And Employee

As a business owner and consumer we function as both the employer and employee. As a result we have two fundamental categories of expenses to contend with: business expenses and personal expenses. Personal expenses are the aspect of our expenses that cover our cost of living — the market basket of goods and services. They may rise substantially over time without much notice and without the appropriate price increase. These expenses are paid through our wages (net profit or net income) since most of us are both employer and employee. If we do not have a profit and simply "break even," we do not have money to pay for our personal expenses. We must ask ourselves for a raise to cover our increased cost of living, our clients will not offer one to us. The CPI and the TPI could be used by you the business owner as a basis for raising your wages for a cost of living adjustment (COLA), keeping in mind the CPI flaws mentioned previously in this article.

Fundamental to making these COLAs is deciding what is an appropriate standard of living. If one personally chooses to purchase a $40,000 auto and pass it off as an increase in their cost of living, I'm sure eyebrows would raise. On the other hand, is it appropriate in our profession to expect health insurance for ourselves and our families? Many technicians, along with 35 to 40 million Americans in 1991 are not able to pay for this expense. I am not suggesting as a business expense, but earning enough profit from your business to pay out of your personal expenses. Is it also reasonable to expect to own a modest home from the income you receive in this profession, or drive a moderately priced auto? These are the types of questions you must ask yourself when you develop your very own pricing model.

To guide your decisions, look around you and see what other professionals of similar training have as benefits. What is the norm in your community? Observe other self-employed people in your locale. Be conscious of the government's personal income index which tracks personal income increases for all workers. If personal income drops substantially nationwide, your own increase may not be appropriate. Over the 12 months ending July 1991, real disposable income dropped about 0.7%. Some of this drop was because of sharply reduced farm subsidy payments, although wage and salary growth has been lower than expected.

I have had clients make comments about our price increase when "times are tough," and they had to take a pay cut or union instituted COLA's were discontinued. What these clients do not understand and you have to explain, is that your pricing structure reflects two aspects: business expenses and personal expenses (reflected through our wages). Business expenses may raise resulting in a price increase, and personal wages may not increase at all, depending on what you choose to do after observing your economic environment.

As mentioned earlier in this article, the CPI is not a tracker of your business expenses. Acting as an employee in your business, the CPI can assist you in setting your wage scale, but it is of no use in structuring business price increases.

Next month's article will tackle that problem by creating a business expense model.

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Coming Events

January 3-4, 1992	**Arizona State Seminar** Aztec Inn, Tucson, AZ Contact: Bob Anderson; 5027 E. Timrod Street; Tucson, AZ 84711 (602) 326-4048
February 21-23, 1992	**California State Convention** Red Lion Hotel, Ontario, CA Contact: John Voss; 2616 Mill Creek Road; Mentone, CA 92359 (714) 794-1559
March 6-8, 1992	**Mid-America Workshop And Tool Show** Hilton Northwest, Oklahoma City, OK Contact: Gary Bruce; 1212 Northwest 183rd; Edmond, OK 73034 (405) 348-3213
March 14, 1992	**Bluegrass Tuning Seminar** Transylvania University, Lexington, KY Contact: Fred Tremper; 413 Skaggs Road; Morehead, KY 40351 (606) 783-1717
March 27-29, 1992	**Central West Regional Seminar** University of Minnesota, Minneapolis, MN Contact: Paul Olsen; 3501 Adair Avenue North; Crystal, MN 55422 (612) 533-5253
April 2-4, 1992	**Pacific Northwest Regional Conference** Inns of Banff Park, Alberta, Canada Contact: Otto Keyes; Box 2415; Canmore, AB T0L 0M0 (403) 678-4169
April 3-5, 1992	**Pennsylvania State Convention** Ramada Inn, West Middlesex, PA Contact: Gary Nelms; RD 7, Box 7281; Mercer, PA 16137 (412) 346-4876
April 13, 1992	**Golden StateOne Day Seminar** Cal State University, Hayward, CA Contact: Ralph Nelson; 16846 Meekland Avenue; San Lorenzo, CA 94580 (510) 278-4661
April 24-26, 1992	**N.E.E.C.S.O.** Crowne Plaza, Natick, MA Contact: Christine Lovgren; 39 N. Bennet Street; Boston, MA 02113 (617) 227-0155
July 22-26, 1992	**35th Annual PTG Convention & Technical Institute** Hyatt Regency, Sacramento, CA Contact: PTG; 4510 Belleview, Suite 100; Kansas City, MO 64111 (816) 753-7747

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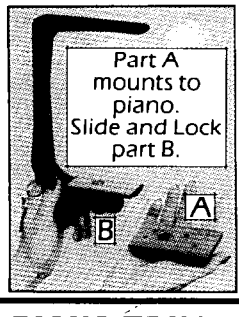

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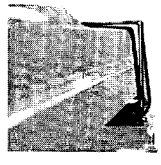
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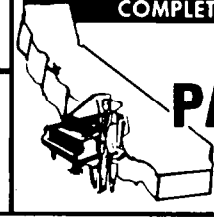
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AUXILIARY EXCHANGE

President's Message

Again holiday times are upon us as I send heart-felt greetings for a joyous, relaxing period of visiting, sharing, peace and goodwill to all!

Perhaps it seems a bit early to be planning for the 35th Annual PTG Convention in Sacramento, CA, but the conscious act of considering the lovely warm climate and the beautiful ambiance of the Hyatt Regency Sacramento Hotel can really provide a lift of the spirit for those of us contemplating all the many airborne, floating, lacy white crystals to be seen when rambunctious Old Man Winter arrives. I don't even want to use the word "snow!" I love driving the car and this is fortunate for someone like me who must provide transportation for her tuner-technician husband. I don't however, enjoy traveling under icy, sleeting or snowy conditions.

In late September the Convention Planning Committee convened in Sacramento. We toured the hotel and convention facilities and directed our attention to plans and procedures for the 1992 Convention and Technical Institute. I found the Hyatt Regency to be very charming and the staff cooperative and friendly. There is a lovely outdoor pool, exercise facilities and things to see and do within walking distance of the hotel. I liked it very much and thoughts of Sacramento will help to keep me warm and in a state of anticipation all winter long.

There are days after traveling 23 miles or so to assess the havoc caused by cavorting "seven-year-oldish" children in a five-year-old white Otto Altenburg grand piano, when thoughts of Sacramento can be a terrific escape mechanism. The frantic call from the pianist's wife, who insists that a few keys may be broken, even when queried about the possibility of hammers instead being broken, coupled with my description of dowel-like rods attached to felt ovals results, of course, in the discovery of five broken hammers!

Two of these hammers could be repaired in the home, the remainder required a completely different kit, which was left at home. After four crossings of the Hudson River, major surgery on the West Bank, careful gluing and fitting within the piano, the Altenburg was receptive to tuning and the technician was frazzled and ready to practice mayhem on the persons of three young perpetrators — fortunately long gone from the scene.

Owners of the pianos, where are your guests' children, and what are they up to? Ah, Sacramento! We hear you calling!

Arlene M. Paetow

Getting Into The Spirit Of The Season

It's time to take a break from making Halloween costumes and write the column for the December Auxiliary Exchange pages. I actually have a couple of gifts in production which is pretty good advance planning for me anymore! Thanks to those of you who have taken the time to send me information for these pages.

I received a nice letter from Phyllis Tremper, our Vice President, reminding those of us who haven't gotten our 1991 dues paid yet that it is nearly 1992! I also received some more correspondence from LaVeta McGary in Pakistan. Her letter is quite long, so I have once again taken the liberty of picking out a few items of interest to the most people.

LaVeta's letter was forwarded to me by Beva Jean Wisenbaker of Houston who passed along the following about Ruth Pollard.

Do you know Ruth Pollard, our First Lady of PTGA? I'm sure many know her at least by sight since she if often introduced at PTG functions. This year marks only the sixth time she has missed a national PTG convention (dating back into the 40s before PTG came into being and she was attending the ASPT conventions). I'm sure the convention in Dallas was the last that we will be attending — she has said so herself. She has always been so active that her own family has nicknamed her the "Road Runner." November 9, 1991, marked her 95th birthday. Ruth doesn't see well, has trouble hearing because of the background noise and moves very slowly with the use of a cane.

The Houston chapter of PTGA has begun having their meetings at Ruth's house so she may attend and participate in the group she has been so supportive of through these many years. It would be wonderful if other members of the PTGA could drop Ruth a card or letter or perhaps even a phone call (713-688-4583). She could use some support herself now. Thank you, Beva Jean, for bringing this to our attention.

Life around here is such a whirlwind of activity it sometimes seems as if we couldn't squeeze in any more. Somehow, life doesn't always "read the schedule" though. Especially at this time of year we really do need to take a minute and correspond with someone we've lost touch with. Perhaps I'm getting more philosophical lately, (my husband would say that it comes from the lyrics to all the Country/Western music I'm always listening to) but no matter where the motivation comes from it's got to be done.

My correspondence can start right here by my wishing everyone a

very happy holiday season with best wishes for a healthy and Happy New Year!

More From Pakistan

I just can't wait for the October issue of the *Piano Technicians Journal*! Bill says that there are lots of English pianos here. (He believes that the British left them behind because they found them a challenge to tune too.)

Our shipment arrived safe and sound, almost. We haven't found our toaster yet, but there are still 13 unopened boxes. We did locate the pinto beans and tortilla flour so we could have a good Houston-ish meal!

I am now the sole principal of the nursing school as my "co-pilot" has gone to Australia. The principal's position is filled with all sorts of challenges — many having to do with the culture. Bill's teaching is coming along great.

Speaking of the holiday season, Pakistan celebrates 23 holidays in all! The two coming up are Defense Day and Quaid-E-Azam's Death (he was founder of Pakistan). The people here are the descendents of Ishmael, and they won't hesitate to tell you so. They still celebrate events that happened 2000 years ago.

The Muharam Holiday was all about the killing of a prophet 2000 years ago. The Sunni's celebrate at night in a festive way (they are the ones who killed him) and the Shia's mourn all day by cutting their backs with knives as they walk down the street. The police have their work cut out for them keeping the two "parades" separated. I found the Sunni celebration very frightening even though the Shia mourning was awful. The Sunnis use war drums and it really does affect your adrenaline, especially when you are white and don't understand all that is going on.

Thanks to those of you who have written! God bless you and the PTG!

LaVeta McGary

Greetings From Kentucky

It's a cool, sunny fall day here at 67° and I've started a fire in my fireplace and have a cup of hot tea by my side. Won't you join me? The nights have dipped down to the mid 40s and we've even put another blanket on the bed, but we don't want to turn the furnace on yet.

Remember this is our first year with a "whole house" furnace. We moved here on June 1, 1990, and most of the members know about our trying to keep a wood stove going last winter and finally we gave in to a furnace. I wrote to each member when I sent them their renewal card. (Speaking of which, do we want to keep the renewal card? Just a question which you can think and ponder over when in your morning shower!)

Anyway, back hills country people that we are now here in the Daniel Boone National Forest, we don't want to turn the furnace on any sooner than we have to. That admits defeat!

As you know, our convention will be in Sacramento, CA, next summer and won't it be nice if we can have 100% of all our past members? How about it?

There are some I haven't heard from yet this year. (To ease your mind, we do have a Post Office here in this little town and I will get your check for $10.00 and send it on to Barbara Fandrich, our treasurer, as soon as I receive it.) You see, that way I can chat with Barbara too. Now I owe Barbara a letter and don't have any checks to send to her, so I wait every day thinking one will come. Barbara is going to think I don't love her anymore. You see, I like our postage money to do double duty! So, come on, you know who you are. I've written twice to remind you!

Oh yes, those California members who haven't renewed yet, you know your registration fee for convention is less as a member, so how about getting your checkbook out right now as you read this and write PTGA — $10.00 dues. It'll soon be time for another year's dues and you don't want to take $20.00 out of one of your spouse's tunings now do you?

Send it to me at the address printed on this page. You California past members are going to be at convention next summer because it's so close and you have many friendships to renew so *renew* right now. Besides, you'll get a personal letter from me and who knows what color ink I'll use in that letter? *(Editor's note: Phyllis wrote this whole thing in hot pink ink!)*

Remember me selling all those cookbooks and paperweights? Well, I still have lots left. Need your help! They make great gifts for last-minute buyers. Shop early and think PTGA!

Phyllis Tremper, Vice President

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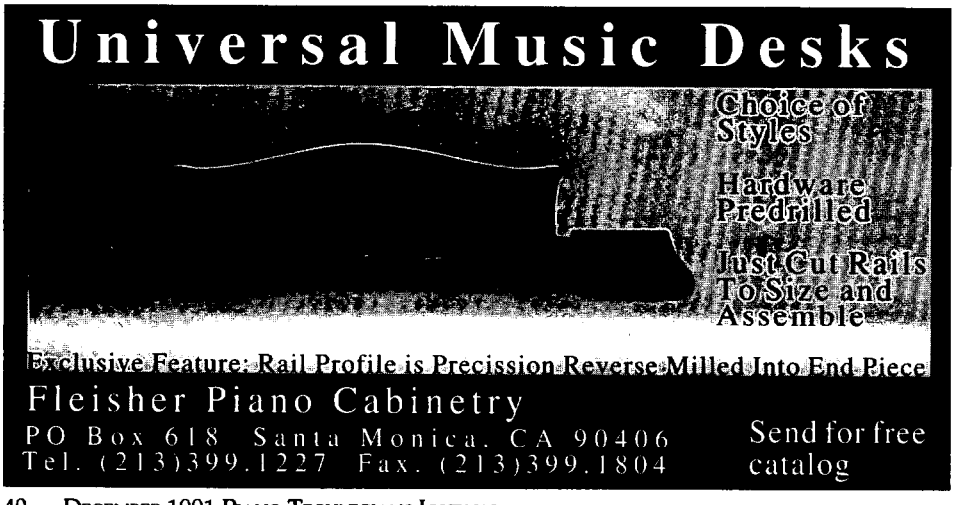

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Tech Gazette

Yamaha Piano Service December, 1991


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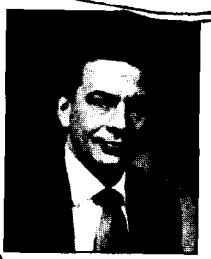
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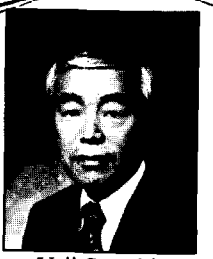
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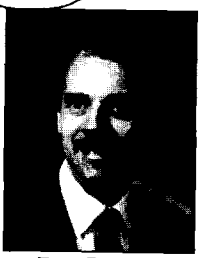
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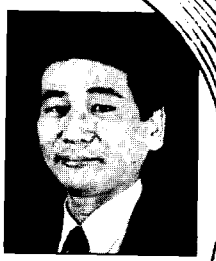
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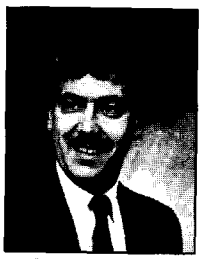
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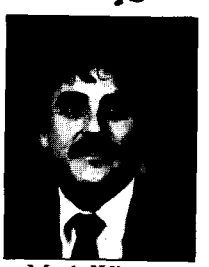
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PIANO TECHNICIANS Journal UPDATE
FOR MEMBERS OF THE PIANO TECHNICIANS GUILD, INC.

Texas Player Project Draws Media Attention

Nolan Zeringue, RTT
President

I have attended the Texas State Association Seminar for the past few years, but this year turned out to be a special one because of the efforts of a member of the Texas State Association and the Chairman of the Economic Affairs Committee of PTG. The fact that Jack Wyatt, RTT, from the Dallas, TX, Chapter is an officer of the Texas State and is Chairman of the Economic Affairs Committee has nothing to do with why this year's meeting had a more special meaning, but Jack Wyatt was the principal player.

Jack and his partner sold a player piano to a couple in Austin, TX, who have a grandson afflicted with spina bifida since birth. He has no use of his legs. He gets around in a wheelchair or sometimes on crutches. Their grandson, Darian Harder, loved to sit and listen to the many rolls his grandparents had for the piano. He could not pump the player, so he needed someone to sit there and pump for him so he might listen to the piano rolls.

I guess after many hours of pumping the player, the question came to Jack, "Is there any way you can fix it so he could pump the piano with his hands?" The obvious answers: no, that can't be done; I've never heard of anything like that; I don't think you can.

Well, that just started Jack to thinking, and one Sunday when no one was around, Jack spent three or four hours in the shop. He said he had all the tools you could imagine spread all over the floor, and he invented something Darian could use. After the prototype, he had one made out of oak and finished nicely. All

Continued on page 4

Dallas member Jack Wyatt, RTT, devised an attachment that allowed Darian Harder, who has spina bifida, to play his grandparents' player piano with his arms. Wyatt, left, is shown with Darian and his father Ken. The device was installed during the recent Texas State Conference in Austin, and the Harder family were guests at the banquet. The story received extensive media coverage.

'92 Invoices Mailed

Invoices for 1992 Piano Technicians Guild dues were mailed to the organization's 3,872 members November first. The dues billing, which included 2,407 Registered Tuner-Technicians and 1,419 Associate members, is due January 1, 1992.

Invoices include Guild dues of $126, reflecting a dues increase approved by last summer's Council, and any chapter dues to be collected by the Home Office. The invoices also will include a line item for "1992 Special Assessment — $12."

The assessment, mandated by the 1991 Council, provides funds for expanded marketing activities for the Guild — new printed materials, products and services to promote the organization to other segments of the music industry, the public and non-members.

Invoices will be delinquent January 31. Those whose dues are unpaid by March 2 will be dropped from the membership roster. Only the names of those whose dues are paid by March 2 will be published in PTG's 1992 Membership Directory, which will be the April issue of the *Journal*.

THE SOUND BOARD

Editor's note: The October Home Office column "Piano Destruction — Threat or Menace" elicited the comments printed below. The article was written with tongue firmly in cheek, but perhaps, in our effort to be humorous and dramatic, we failed to emphasize that the pianos destroyed had already been condemned as unrepairable. The "tabloid" style of the article also may have created the impression that some sort of cult-type activity was involved. Such was not the case.

The following letter has been edited for length.

Dear Editor:

Reading "Piano Destruction — Threat or Menace" was very disturbing. Upsetting — felt it for few days! Anyone who'd go out on a piano killing mission couldn't have been a real piano technician (at heart) to begin with...more on this later.

At the rate that the oldies (especially uprights) are being destroyed, there won't be anything left in the future (for museums) for future generations of piano technicians to observe and learn from. Seems a lot of younger present technicians have an attitude toward the pre-1940 pianos...This lack of interest is a *threat* and *menace*...The availability of older playable (honorable restored) pianos puts more pianos in more homes. We should "flood" the homes with pianos. It's more jobs! More tunings! Good for the economy! A good way to keep America's kids busy and out of trouble — playing an instrument...

Older pianos can be rebuilt honorably, and donated to institutions, churches — a tax write-off. Regardless of where a rebuilt piano ends up, word gets out sooner or later of the "quality" that went into the rebuilding — good or bad, it's like leaving your fingerprints at a crime scene...An old piano made playable could be a wonderful gift to a poor family (possibly deductible during Christmas "needy drives"). For a child, an old piano is better than no piano...

The guys in your "secret photos" probably never were genuine technicians in the first place. They should sell firewood. If the smashing and chopping is a ritual or festival, there must be some inner unresolved anger and rage in these men...

I found quality and beauty in names that bit the dust. I intend to "adopt," love and care for as many as I can. Can you imagine 100 years from now where only old Steinways exist because only those were saved — while others were destroyed because of a lesser-known name? How boring! Bias! As a creative artist, I appreciate the preservation and availability of art from the past. Thank God there were people who cared! I was able to see the ancient art of Greece, Rome, the masters...because some people *cared*!

Please, let's stop killing the old pianos...

Miss Denise Ferrari

To The Soundboard:

I happen to bear a resemblance to one of the participants in the October *Journal* photograph of a piano-smashing "ritual." I'd like to assure any colleagues who share my lack of enthusiasm for such activities that I was not present. Indeed, I do not engage in any nocturnal activities that might require wearing a disguise.

I can just imagine a customer casually presenting that article to some unfortunate technician, after he or she has explained how their RTT designation proves them qualified to conscientiously service Grandma's upright, a.k.a. the family heirloom. This after we've coughed up extra money for marketing. What good is a new logo if people suspect that we enjoy dressing up a la Scarlet Pimpernel, and burning pianos under the full moon?

There are unsalvageable pianos that are best destroyed, and "mediocre" pianos that might only be replaced by a newer "mediocre" piano, or an even more mediocre keyboard. Let us choose carefully which pianos we send to the Trebuchet. Dead pianos tell no tales; they also produce no music, and require no tunings.

Richard Friedman,RTT,
Ithaca, NY

To The Soundboard:

This article was in our newspaper and I'm sure every technician will be real excited to know about this remarkable breakthrough in piano technology! This needs to be in the *Journal*!

Dick Bittinger

"Moths Could Cause
Untuning Of Piano

"If your piano is out of tune — or the action isn't quite right — the cause could be clothing moths, according to a mothproofing company.

"The felt sections of hammers in pianos can be attacked by the larvae laid by clothing moths and cause severe damage, explains Mel Applebaum, president of Excell Products Corp., of Clifton, NJ.

"Simply storing a small bag of mothballs inside a piano should solve the problem, he notes.

To The Soundboard:

I am writing in the hope that you will be able to find space for this letter of sincere thanks to all my fellow members and friends who have been so supportive to me and Agnes during my recent illness. To answer each card and letter at this time would be impossible.

Every card, every letter, every

Continued on next page

Soundboard...

phone call, every visit helped provide strength and support. If nothing else, PTG has provided us with the greatest circle of friends one could ever wish for. Your good wishes have been a major support during these trying times.

Recovery seems to be progressing well. One of these days you just might see us coming through the door. Our thanks to everyone.

Charles P. Huether, RTT

Please indicate that your letter is intended for publication. Submissions may be edited for length.

Mini-Techs Needed For '92 Institute

Would you like to share an interesting business or technical subject of piano repair or tuning in a 25-minute class period?

The annual PTG convention will be held in Sacramento, CA, July 22-26, 1992.

We are making up the schedule, and if you want to be considered for a Mini-Technical class, please be prompt in your response to this notice. Here are the qualifications and the information we need:

- You must be a member of PTG.
- You must definitely be planning to attend the PTG annual convention and institute.
- You must not be scheduled to teach another institute or a committee class and not be a test examiner.
- Please provide your name, address, phone number and your chapter affiliation.

Thank you, and please send your request and information to: Dick Bittinger, Mini-Technical Coordinator; P.O. Box 51; Brownstown, PA 17508-0051.

Dick Bittinger

In Respectful Memory...

Fern Morton

Fern Cole Morton, wife of Don Morton of the Los Angeles Chapter, passed away on October 17, 1991, after battling malignancy for five and a half years.

Fern was born November 11, 1918, at Wheeler, WA, to Earl and Bertha Cole, the second of four children. Her childhood was spent at Moses Lake, WA, where she attended a one-room school. She later attended a boarding academy at Neppel for high school, and was chosen "Miss Neppel" in a beauty pageant.

Her educational pursuit then took her to Walla Walla College for pre-nursing and to Glendale California Sanitorium and Hospital where she received her R.N. degree in 1941.

Fern was first married in 1943 to Second Lt. Ernest Alberty, Army Air Corps who unfortunately lost his life in a training flight plane crash, after which Fern sadly moved to Portland, OR, to resume her nursing career at a V.A. hospital.

At the end of the war she returned to Glendale, CA. In July 1947 she met Don Morton and they were married in December of that year. Their marriage was blessed with two sons — Randy and Rob.

Fern and Don shared an enthusiasm for physical fitness, including jogging, camping, hiking, etc. During her lifetime, Fern participated in more than 40 10K runs (6.2 miles each), and along with others climbed Mt. Whitney.

Fern and Don maintained a spacious, lovely home which was always open to foreign students, friends and large groups who enjoyed parties, good food, and fellowship there. To entertain was one of Fern's greatest joys. Fern was a member of the Los Angeles PTGA (formerly ASPT) for about 42 years, lending her grace, support, and many areas of expertise and knowledge. She was serving as chapter president when she became ill, and continued to serve throughout her term.

Fern was well-known to PTG convention goers, and along with Don throughout the piano industry both in this country and abroad. Fern was noted for being friendly, compassionate, loving, kind, understanding, hard working, hospitable, for devotion to family and church, and for many other wonderful traits.

She gave many years of loyal service to her Seventh Day Adventist Church, serving in many areas there, always maintaining a strong participation and interest in the music department of the church.

The family suggests that gifts may be made to The Fern Morton Memorial Fund; Music Department; Northridge Seventh Day Adventist Church; 17700 Plummer Street; Northridge, CA 91325

Fern is survived by her husband, Don; son, Randy and his wife Edna, their children Taylor and Charlie; and son, Robert. Also surviving are two brothers of Moses Lake, WA; and a sister, Phyllis of Dillingham, Alaska.

Pauline Miller

SCRVP Leon Speir, President Zeringue and Darian's sister Brynne watch as he pumps the player with his arms.

Player...

this time he really didn't know if it would work and wouldn't know until it would be installed on the piano.

When we arrived in Austin for the seminar, Jack had the contraption in the car and showed it to a few of us, asking if we could guess what it was, then brought it into the exhibit hall and put a sign on it for everyone to guess what it might be. It did look like something we had not seen before. He had not told many people what his plan was.

Jack decided that this project would be a Piano Technicians Guild project and not a project for his store. He spent the day Friday making arrangements with the news media to be there when the project would be installed on the piano and Darian would try to play the player piano for the first time himself. The local ABC affiliate loved the story and said they would find a cameraman and would be there. Jack asked Leon Speir, RTT, the South Central Regional Vice President, and me to accompany him to the house to install the hand operated mechanism. (What Jack really wanted was for someone besides himself to be there to talk to the media so he wouldn't have to.) Without hesitation we said we would go and everything was set up for Saturday morning.

Darian Harder with his father Ken Harder and little sister Brynne, whom Jack calls "George," met us at the house as did Glenn Hill, news photographer with Channel 24, KVUE TV in Austin. Glenn filmed for about 2 1/2 hours and interviewed Darian, Ken, Jack and me. He told Darian the story would be fed to ABC through Channel 8 in Dallas, and also fed to CNN who would put Darian on national TV. Channel 24 ran about 2 1/2 minutes of the story on Saturday night, and it turned out to be a very well done story.

Every now and then while we were installing the brackets, Jack would come up from under the piano with a big smile on his face and say, "You know, I think it's going to work!" All three of us were having a good time doing this project. It was the kind of special thing we had never been in involved in. I certainly feel that PTG should do more of this type of thing.

We invited Darian and his family to come as our guests to the banquet on Saturday night. They did come. Darian was fairly well the center of attention, received a standing ovation for being there as our guest, and was greeted by nearly all as they were leaving the banquet. I had taken about 25-30 pictures that morning which were on display at the banquet.

At the end of the banquet, Jack received a standing ovation for his gracious giving of this special gift. It was obvious at that point that a standing ovation was not what Jack was looking for by his actions. He was just doing something good for someone, which is something we find quite often in many of the membership of PTG who give so often most willingly and unselfishly of themselves.

These photos tell some of the story — especially the look on Darian's face when he could play the piano himself. It was a great moment we won't soon forget, and hopefully if the story goes nationwide, someone will see it and know a little more about some of those members of the Piano Technicians Guild.

Thanks Jack, both from me and Leon.

Membership Status

Northeast Region	860
Northeast RTTs	533
Southeast Region	641
Southeast RTTs	389
South Central Region	325
South Central RTTs	211
Central East Region	650
Central East RTTs	400
Central West Region	391
Central West RTTs	251
Western Region	618
Western RTTs	390
Pacific NW Region	387
Pacific NW RTTs	233
Total Membership	3,872
Total RTTs	2,407

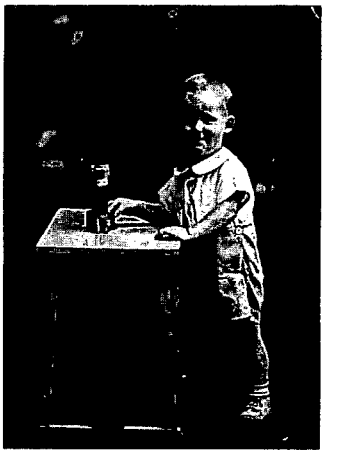
These Eight Kids Could Help You Strike Gold In California!

1

2

3

4



5

6

7

8

Who are they? You tell us!

All we can say is that all eight grew up (?) to become prominently involved in Piano Technicians Guild activities — in one way or another.

So go for the gold! Take a guess! You're eligible to win a special prize — gold coins valued at more than $300! The earliest postmarked entry wins. The winner will be announced during PTG's 35th annual Convention and Technical Institute July 22, 1992, in the Hyatt Regency Sacramento.

Watch for more clues in the months to come!

Send your contest entries to:

Gold Contest
Piano Technicians Guild
4510 Belleview, St. 100
Kansas City, MO 64111

Contest Rules

The contest is open to all PTG members and non-member registrants at PTG's 35th Annual Convention and Technical Institute July 22-26, 1992 in Sacramento, CA. PTG Board members, staff, and Convention Planning Committee members are not eligible to win.

The prize will be awarded to the correct entry with the earliest postmark or, if no winning entry has been received prior to the convention, to the first correct entry received at the convention membership booth.

Name: _____

Address: _____

City, State, Zip: _____

My Eight Lucky Kids Are:

1 _____ 5 _____

2 _____ 6 _____

3 _____ 7 _____

4 _____ 8 _____

Corrected Budget Published

The 1991-92 budget published in November's *Journal* Supplement contained a production error in the 1991 figures.The error appears in the line "Total Merchandise Expense," which for 1991 should be $12,750, not $22,750. Therefore, the line for "Total Services and Merchandise" should be $254,050, "Total Expenses" should be $590,400, and "Net Income (Loss)" should be $3,165. Therefore, the "Net After E.R. Allocation" line should be -$8,706.

In addition, to help identify monies raised by the 1992 Special Dues Assessment, a separate line item has been created, and the footnotes modified to reflect this change.

For your convenience, a corrected budget has been published on the facing page. This budget is designed to be cut out and attached to the supplement you received in November.

The Piano Action Handbook

Now Available!

Third Edition, compiled by Randy Potter, RTT
PTG Members: $8; Non-Members: $10

The Calculating Technician

By David Roberts
$13

The Piano Technicians Guild Foundation
4510 Belleview, Suite 100
Kansas City, MO 64111

Please Add $2 per item for shipping and handling

Visa
MasterCard

DATES & DEADLINES

December 24-25, 1991
Christmas — Home Office closed.

December 31, 1992
New Year's Eve — Home Office closed.

January 1, 1992
1992 Annual dues officially due.

New Year's Day — Home Office closed.

January 11-12, 1992
RTT Tuning and Technical Exams. Puget Sound Chapter Test Center. Application Deadline: Jan. 4, 1992. Examiner trainees welcome to participate. Contact: Wayne Matley, 2502 Harmony Lane, Enumclaw, WA 98022. (206) 825-6921.

January 19, 1992
RTT Tuning and Technical Exams, Washington, D.C. Chapter. Technical exam contact: Sam Powell, (301)840-0267. Tuning contact: Michael Travis, (301) 441-3555.

January 25, 1992
RTT Tuning and Technical Exams. Portland, OR, Test Center. Contact: Dave Peake; 5826 NE 115th; Portland, OR 97266. (503) 761-4800.

January 31, 1992
Unpaid membership dues delinquent.

February 3, 1992
1992-93 officer nominations to Nominating Committee Chair.

Amendments proposed for 1992 Council due to Bylaws Committee Chair.

March 2, 1992
Members delinquent in 1992 dues to be dropped.

June 24, 1992
Convention early registration deadline.

July 22-26, 1992
35th Annual Convention and Institute, Sacramento, CA.

Piano Technicians Guild Budget

Income

	1989 Actual	1990 Actual	1990 Budget	1991 Budget	1992 Budget
Dues and Fees					
RTT Dues (1)	$267,033	$254,800	$284,055	$263,000	$255,500
Associate Dues (1)	$135,825	$140,438	$104,445	$138,540	$153,200
Special Assessment	NA	NA	NA	NA	$39,000
Senior and Sustaining Dues	$1,292	$4,698	$1,300	$1,300	$4,500
Entrance Fees	$5,019	$5,370	$2,500	$6,000	$5,500
Intl. Correspondent Fees	$3,351	$3,342	$3,000	$3,000	$3,000
Total Dues and Fees Income	***$412,520***	***$408,649***	***$395,300***	***$411,840***	***$460,700***
Membership Services					
Publications Income					
Journal Advertising	$75,715	$78,051	$75,000	$76,000	$85,000
Journal Subscriptions	$19,325	$21,178	$30,000	$28,000	$22,500
Non-Periodicals	$3,843	$3,197	$3,050	$5,525	$4,000
Total Publications Income	*$98,883*	*$102,426*	*$108,050*	*$109,525*	*$111,500*
Merchandise					
Business Aids	$10,278	$11,708	$10,000	$10,000	$12,500
Other Merchandise	$1,667	$3,077	$5,000	$6,000	$5,000
Total Merchandise Income	*$11,945*	*$14,785*	*$15,000*	*$16,000*	*$17,500*
Other Services	$7,771	$5,122	$3,500	$2,700	$5,000
Total Membership Services Income	***$118,599***	***$122,334***	***$126,550***	***$128,225***	***$134,000***
Other Income					
Interest Income	$31,419	$33,449	$20,000	$27,000	$35,000
Friends of IAPBT Contributions	$135	$1,112	$0	$1,000	$1,000
Convention (2)	$19,993	$5,641	$25,000	$25,000	$20,750
Miscellaneous Income	$2,834	$2,140	$500	$500	$500
Total Other Income	***$54,381***	***$42,341***	***$45,500***	***$53,500***	***$57,250***
Total Income	**$585,501**	**$573,324**	**$567,350**	**$593,565**	**$651,950**

Expense

	1989 Actual	1990 Actual	1990 Budget	1991 Budget	1992 Budget
Operations					
Home Office (3)					
Office Administration	$156,022	$178,234	$208,250	$200,000	$200,000
Telephone	$6,210	$5,229	$6,000	$5,000	$6,500
Printing	$8,526	$8,882	$6,500	$8,000	$9,000
Office Supplies	$6,374	$4,259	$1,500	$2,000	$5,000
Postage, Shipping, Storage	$18,524	$20,623	$11,100	$16,000	$22,500
Other Office Expenses	$638	$525	$100	$100	$100
Total Home Office Expense	*$196,294*	*$217,752*	*$233,450*	*$231,100*	*$243,100*
Professional Services					
Legal	$1,397	$2,807	$2,000	$2,000	$2,500
Accounting	$3,970	$3,242	$2,000	$2,000	$2,500
Other Services	$1,868	$0	$0	$0	$100
Total Professional Services	*$7,235*	*$6,049*	*$4,000*	*$4,000*	*$5,100*
Business Expense					
Insurance	$4,529	$6,114	$3,500	$6,500	$6,500
Taxes	$459	$1,059	$1,000	$1,000	$1,200
Bank Charges	$756	$1,348	$100	$750	$1,500
Bad Debts	$1,223	$15	$100	$250	$250
Depreciation	$10,320	$10,320	$2,500	$10,000	$10,320
Interest Expense	$6,292	$4,381	$0	$0	$5,000
Total Business Expense	*$23,579*	*$23,237*	*$7,200*	*$18,500*	*$24,770*
Total Operations Expense	***$227,108***	***$247,039***	***$244,650***	***$253,600***	***$272,970***

Expense (Continued)

	1989 Actual	1990 Actual	1990 Budget	1991 Budget	1992 Budget
Services And Merchandise					
Member Insurance (4)	$40,480	$58,708	$37,500	$48,000	$60,000
Merchandise					
Business Aids	$8,234	$6,411	$10,000	$1,000	$8,000
Other Merchandise	$4,614	$4,849	$12,200	$11,750	$5,000
Total Merchandise Expense	*$12,848*	*$11,260*	*$22,200*	*$12,750*	*$13,000*
Communications Services					
Marketing	$2,061	$3,593	$4,000	$14,000	$50,000
Industry Representation	$8,955	$5,687	$3,850	$4,250	$6,000
Chapter and Member	$6,058	$8,047	$5,500	$4,100	$9,000
Total Communications Expense	*$17,075*	*$17,327*	*$13,350*	*$22,350*	*$65,000*
Publications					
Journal Editorial Expense	$19,691	$27,063	$23,000	$21,900	$21,900
Journal Production Costs	$99,671	$104,777	$112,000	$114,050	$100,000
Journal Postage	$9,000	$11,000	$12,500	$12,000	$13,000
Journal On Tape	$1,961	$1,669	$2,600	$2,400	$2,000
Journal Index	$0	($1,474)	$0	$0	$0
Unseen Artist	$0	$12,388	$9,600	$9,600	$9,600
Other Publications (5)	$0	$1,386	$0	$11,000	$3,000
Total Publications Expense	*$130,322*	*$156,809*	*$159,700*	*$170,950*	*$149,500*
Total Services and Merchandise	***$200,725***	***$244,105***	***$232,750***	***$254,050***	***$287,500***
Organizational Expense					
Board Meeting Expense	$17,611	$19,343	$20,000	$20,000	$20,000
Management Review	$1,093	$3,513	$3,000	$3,000	$3,000
Board Membership Development	$17,750	$24,696	$23,500	$30,000	$30,000
Board Administrative Expense	$11,510	$11,044	$10,000	$10,000	$10,000
Committee Expense					
Exam. and Test Standards (6)	$4,156	$1,976	$7,000	$7,000	$6,000
Chapter Management	$179	$961	$1,000	$1,000	$1,000
Chapter Program Dev.	$0	$0	$625	$625	$500
Chapter Newsletter	$0	$0	$625	$625	$500
International Relations (7)	$1,969	$0	$0	$0	$100
Trade Relations	$255	$219	$2,500	$2,500	$1,500
Teacher Relations	$2,098	$2,376	$2,500	$2,500	$2,500
College and University	$192	$2,100	$0	$0	$2,500
Other Committees	$0	$0	$0	$0	$2,500
Special Projects (8)	$2,743	$5,163	$4,250	$3,500	$1,750
Total Committee Expense	*$11,592*	*$12,794*	*$18,500*	*$17,750*	*$18,850*
IAPBT Donations and Gifts	$1,281	$39	$0	$1,000	$0
Foundation Donations	$1,050	$150	$0	$1,000	$1,000
Total Organizational Expense	***$61,886***	***$71,579***	***$75,000***	***$82,750***	***$82,850***
Total Expenses	**$489,719**	**$562,723**	**$552,400**	**$590,400**	**$643,320**
Net Income (Loss)	**$95,782**	**$10,601**	**$14,950**	**$3,165**	**$8,630**
Emergency Reserve Allocation (9)			**$11,347**	**$11,871**	**$13,039**
Net after E.R. Allocation			**$3,603**	**($8,706)**	**($4,409)**

Notes:

1. A $12 dues increase was passed by the 1991 Council and becomes effective in the 1992 dues year. The Council also levied a $12 assessment to fund increased marketing activities. The 1992 RTT dues income figure was adjusted downward to reflect a possible 10 percent attrition in that category, both from normal causes and from reaction to the dues increase. The 1992 Associate dues figure, which has been steadily increasing, also was adjusted downward slightly in the expectation that new members would replace most of those who resign rather than pay higher dues.
2. For compatibility with previous budgets, convention income is shown as a net figure. However, note that some 1990 Convention costs were expensed in previous years.
3. Office Administration includes rent, payroll costs, equipment and other items covered under Management Fees prior to 1989.
4. The 1991 Council revised this figure to reflect rising costs of retaining the member death benefit.
5. The 1991 Council appropriated an additional $10,000 over the proposed budget to fund new publishing projects.
6. Expenses of the Examinations and Test Standards Committee are split between the committee's budget and the convention budget.
7. An addition of $3,000 to the 1991 item had been proposed to fund activities in connection with the 1991 IAPBT Conference in Seoul, Korea. However, the 1991 Council voted to leave the figure at the level approved by the 1990 Council.
8. In previous budgets, all committee expenses other than those listed appeared under Special Projects.
9. PTG's Bylaws require that two percent of annual gross income be placed in an Emergency Reserve Fund. Therefore, this amount is shown as a budget allocation. It does not appear as an actual expense since it is a transfer of assets, not an expenditure.