PIANO TECHNICIANS

Journal

June 1993

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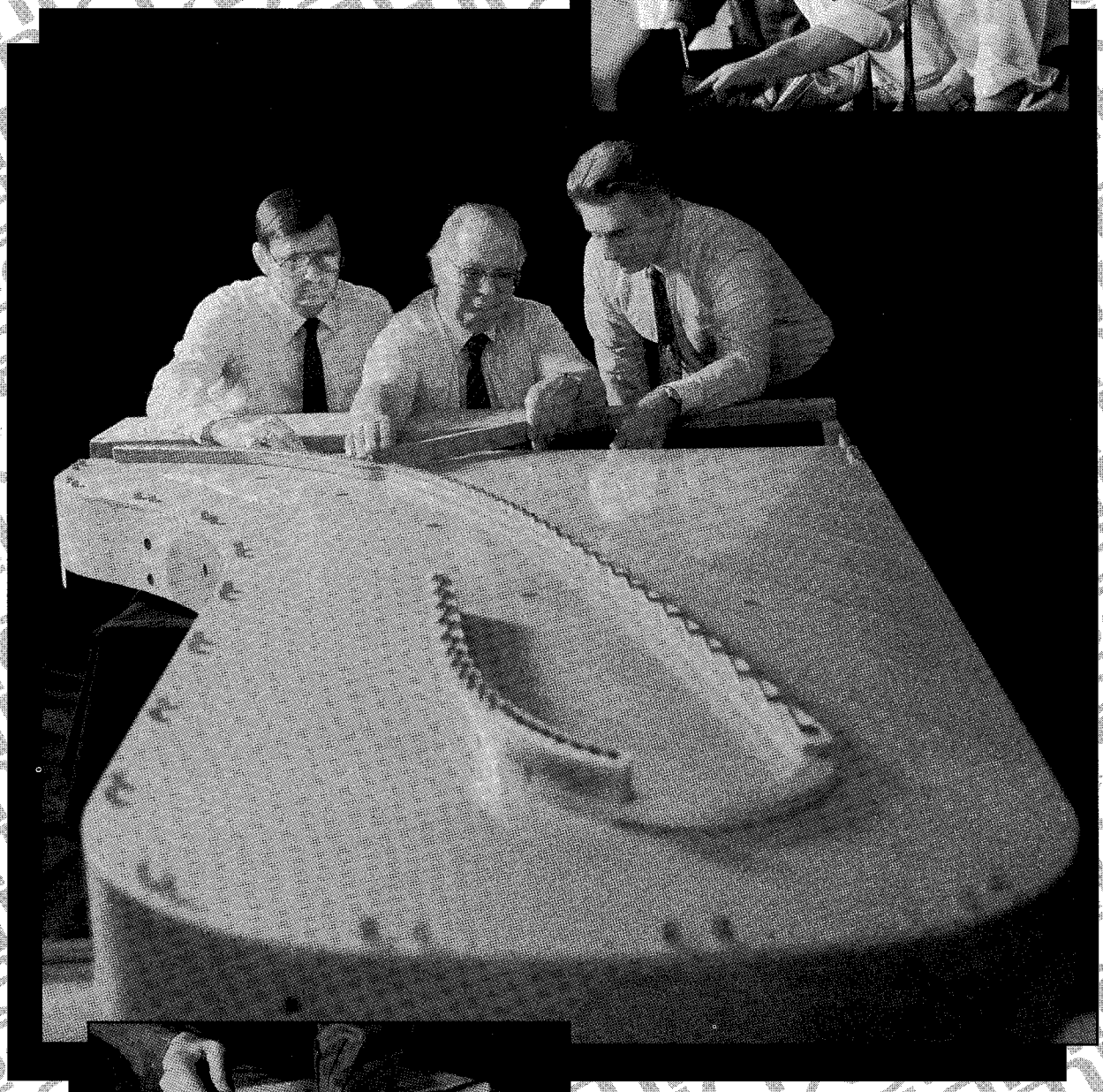

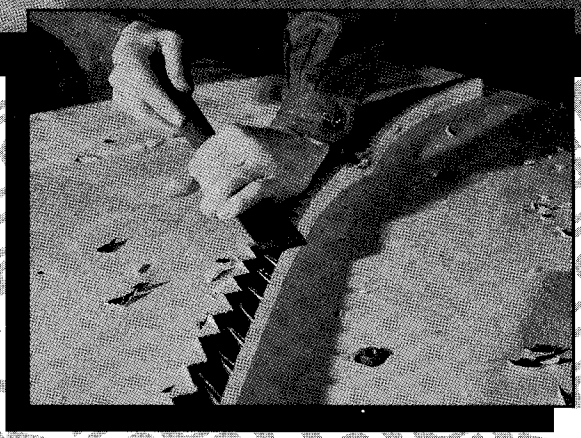

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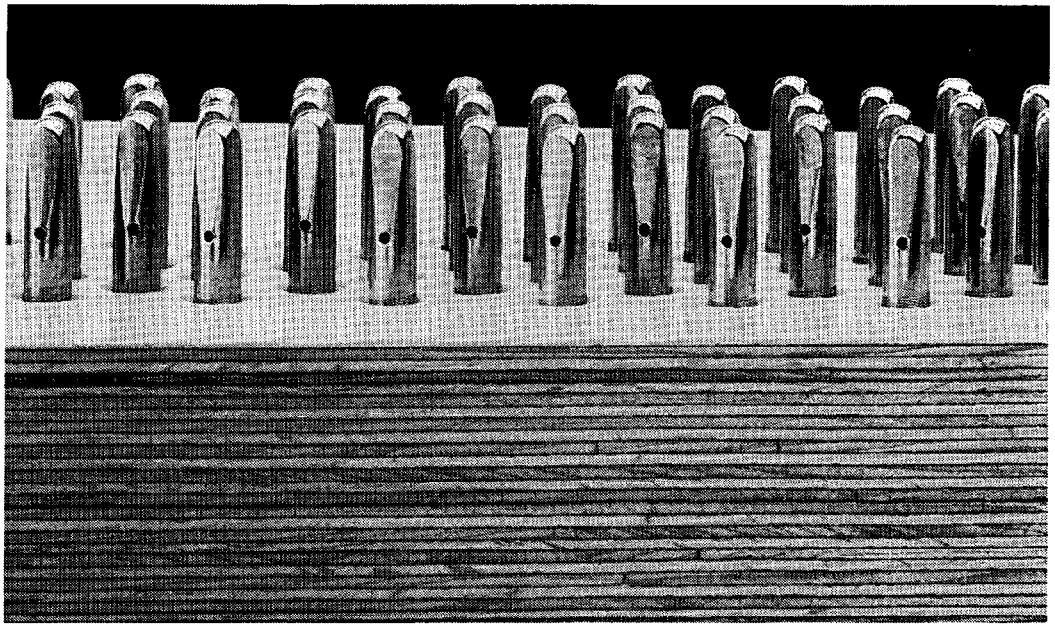

At long last Schaff has obtained a distributorship for the German made, multi-laminated beech pin block material called DELIGNIT®. For several years now this type of pin block has been imported into the United States and Canada. Now this particular DELIGNIT® grade, having the same characteristics of density as used by almost all European piano manufacturers, is available at Schaff.

As the above picture of a typical 1⅜" DELIGNIT® pin block shows, there are approximately 21 cross laminated plys of high quality beech veneers that are compressed together with a modified hot curing phenolic resin applied in a special dry-bonding process. A full panel pin block measures 48" wide x 59" long with a double block being 19" wide and a single block measuring 9½". All of the various width blocks come in either 1¼", 1⅜" or 1½" thickness.

Single and double blocks can be shipped UPS, but a full panel must ship via truck. Write or call for pricing information.

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PIANO TECHNICIANS JOURNAL

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JUNE 1993 • VOLUME 36 • NUMBER 6

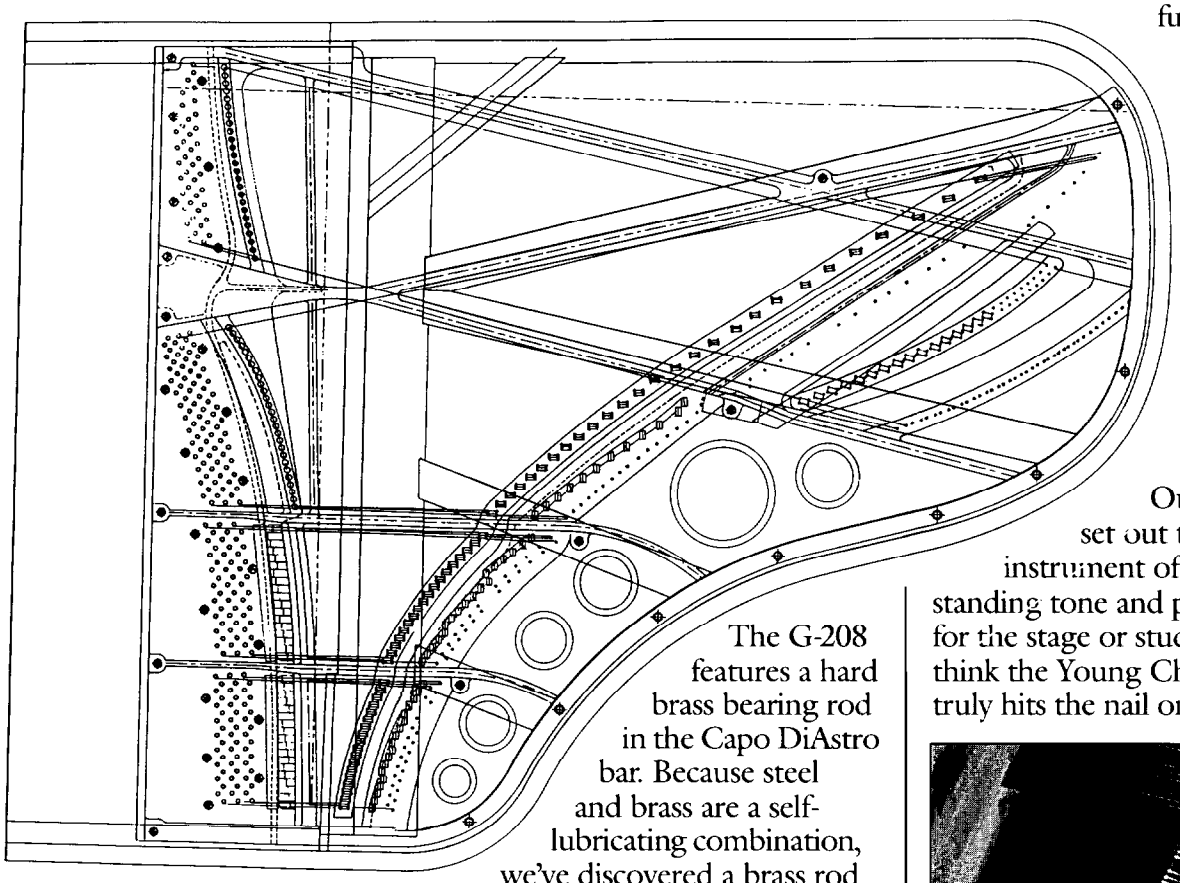
ON THE COVER

Recycling anyone? Don't get enough exposure to pianos during the day? Dream about tuning when you sleep? Before anyone gets primed to fire off a nasty-gram about the desecration of pianos, read on. The photo, framed by photographer Chris Hartlove, is provided courtesy of the Franz Bader Gallery in Washington DC, who, along with the creator of the "functional" art item, granted permission to use the photo. The bed was designed and built by David Hess of Baltimore MD, who specializes in making "furniture from rescued objects", according to the original poster. The bed, a 1991 creation, consists primarily of an upright piano plate, porch railings, and bowling balls, and measures 74" x 60" x 80". I failed to get the weight of the assembly, but don't think I'd want to be the mover! Thanks also to Wretha Hanson, proprietor of the gallery for providing an original transparency, and to Colette Collier for making me aware of its existence. -jh-

A nuts and bolts guide to the new Young Chang G-208.

Our engineers are obsessed with the little things because they recognize the importance of attention to detail. But lately, they've become equally obsessed with big things, and the result is 6′10″ long. Our new G-208 grand is a departure for us and represents the smallest and largest of our latest innovations.

The G-208 is a 6′10″ grand piano of an entirely new scale design. It features our new "Asymmetrically Crowned" soundboard which places the highest part of the crown in each rib directly under the bridge providing maximum support under the downbearing pressure of the strings. This new soundboard design exhibits improved power, projection and tuning stability, and offers a longer soundboard lifetime. We're so pleased with this new design, we're now incorporating it into all our grand pianos.

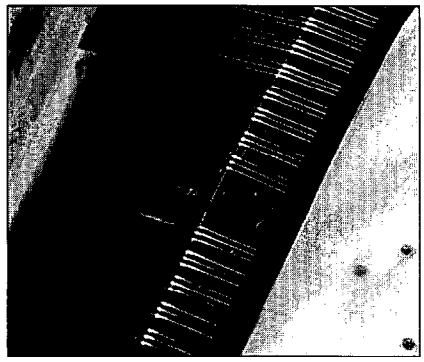


The G-208 features a hard brass bearing rod in the Capo DiAstro bar. Because steel and brass are a self-lubricating combination, we've discovered a brass rod offers better control of strings during tuning. In addition, the brass rod is easily replaced later in the life of the instrument eliminating the need for reshaping of the capo bar.

We also took a close look at our action and developed an all-new action design which improves response without loss of projection or clarity.

Our new double duplex system terminates the strings at the rear of the bridge and near the tuning pins with duplex bars. Both duplex lengths of the strings for each note are then terminated in equal length offering improved sustain, projection and clarity.

Together these innovations create an instrument with a rich, full sound, greatly improved response and a remarkable evenness of tone throughout the entire range of the keyboard. Our engineers set out to design an instrument offering outstanding tone and performance for the stage or studio. And we think the Young Chang G-208 truly hits the nail on the head.



Because strings bear against a replaceable brass rod, tuning control is improved.

For technical information on our new G-208 grand piano, write to us at Young Chang America, Inc., 13336 Alondra Blvd, Cerritos, CA 90701. Or call 310/926-3200, ext. 237.

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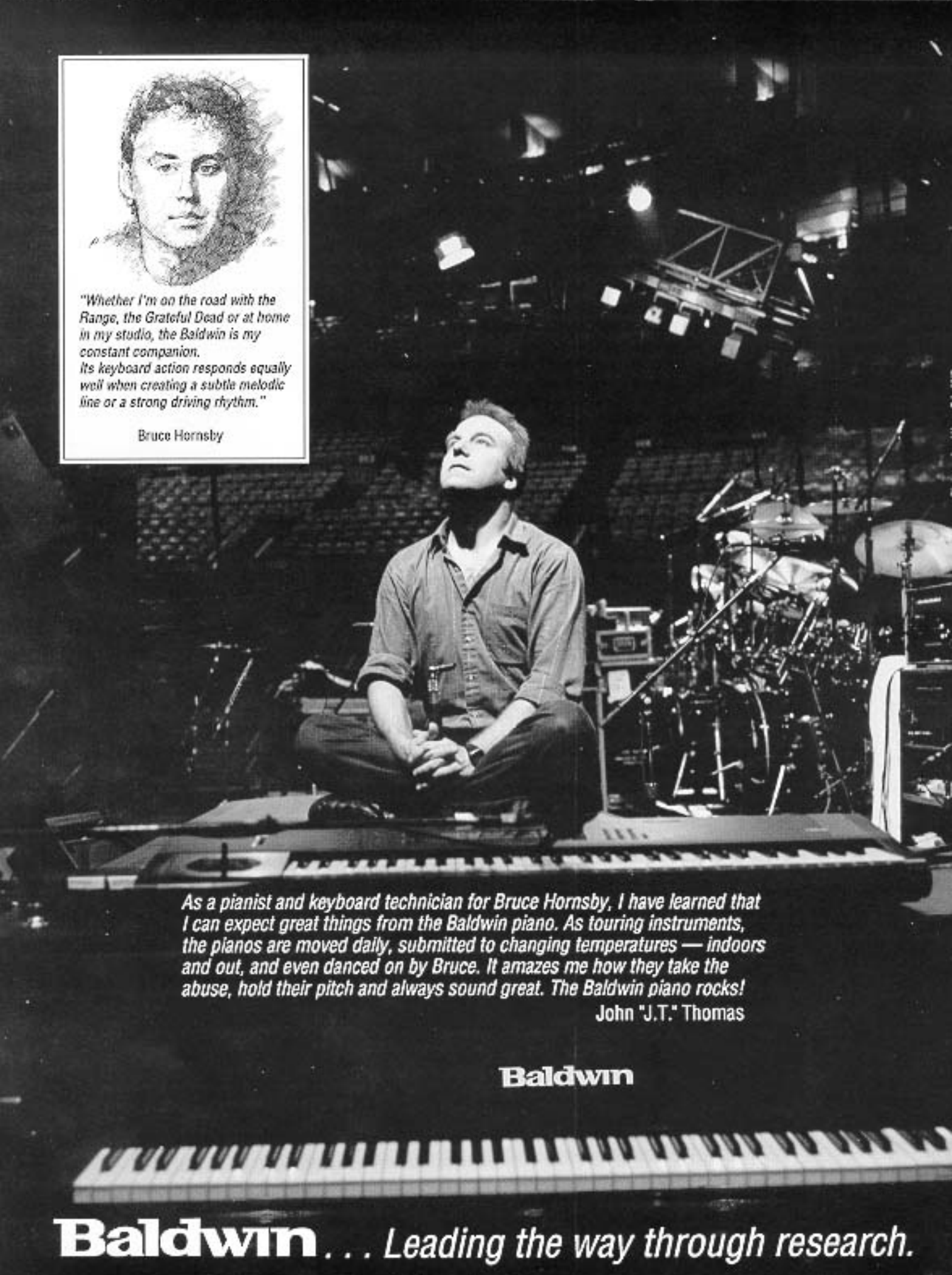
The best the world has to offer.



"Whether I'm on the road with the Range, the Grateful Dead or at home in my studio, the Baldwin is my constant companion.
Its keyboard action responds equally well when creating a subtle melodic line or a strong driving rhythm."

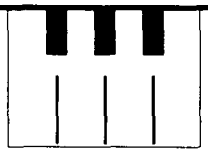
Bruce Hornsby

As a pianist and keyboard technician for Bruce Hornsby, I have learned that I can expect great things from the Baldwin piano. As touring instruments, the pianos are moved daily, submitted to changing temperatures — indoors and out, and even danced on by Bruce. It amazes me how they take the abuse, hold their pitch and always sound great. The Baldwin piano rocks!

John "J.T." Thomas

Baldwin

Baldwin . . . *Leading the way through research.*



President's Message

An Associate By Any Other Name

One of the purposes of the PTG survey done in January was to explore members' current attitudes towards our category structure. Council will be considering this issue once again in July, and, as I mentioned to you in my March message, we need to carefully consider this decision so that we can move on positively. In this article we will look at some of the relevant survey data; each chapter delegate or president has received the Executive Summary of the survey results in the Council agenda book. Any member can consult this document for more detail.

What did we learn about how our members see our category structure and how Associates perceive their role in PTG?

•We asked if the current Associate category should be split into two: members who tune and could be considered potential RPT's and members who support the Guild but do not tune. 68% of RPTs and 52% of Associates favored this idea.

•When asked which title would be preferred for a "pre-RPT" category, 56% of RPTs prefer the name "Apprentice"; however, only 18% of Associates concurred. 62% of our present Associates prefer to keep the title "Associate" for their category; 19% of RPTs agree with them. The split in opinion here was dramatic.

•For a proposed second category—those who do not tune—the RPTs and Associates both preferred "Affiliate", with the title"Supporting" coming in second, followed by "Allied Tradesman".

•81% of Associates in the survey favor designing a continuing education program as a training program for upgrading to RPT.

•40% of the responding Associates have already taken at least one of the three tests that make up the RPT exam.

•When asked the main reason they haven't taken and/or passed the RPT exam, the Associates said that they do not feel ready. The second most common reason was that aural tuning skills are required.

•Only 10% of responding Associates say they do not tune or tune very little, indicating that most Associates are indeed potential RPTs.

•Associates want to learn: 88% say they want to buy books on piano technology topics; 24% asked for more specific help in upgrading to RPT, such as local chapter programs or videos.

How does this information enlighten our discussion of a possible category restructure? Clearly, most PTG members want to see more Associates upgrading to RPT; in 1992, only 58 new RPTs were created. Concern over the shrinking percentage of RPTs underlies the whole discussion of member categories. Therefore, the good news is that the Associates show strong interest in learning and upgrading. In the survey results, I see a hunger for a clearer "path" to attaining RPT status, more books, and more local training resources. The RPT exam is perceived as challenging, but fair overall. Indications are strong that if PTG placed more effort, resources, and organization into the training of Associates, we could see more RPTs.

On the other hand, the results indicate that most Associates view the title"Apprentice" negatively. Were Council to choose this title for the "pre-RPT" category (assuming the category is split), the membership could become more polarized than it is now. Some members argue that the "Apprentice" title is honorable; however others see it as somewhat demeaning. While one side argues that use of the term "Apprentice" might encourage upgrading, others fear that many present Associates will be alienated and drop their membership, resulting in a loss of potential RPTs and revenue. In our voluntary organization, we are having trouble marketing the value of our exam: 80% of the RPTs believe that attaining RPT status is important to success as a piano technician, but only 55% of Associates agree with them.

Would a title change provide an incentive to upgrade? A title change *alone* will likely not create more RPTs. My reading of the survey as well as my experience with the membership leads me to this conclusion: if we want more Associates to upgrade, PTG will have to decide that this is our number one educational priority. We will have to commit to training these future RPTs. We will have to use our Journal, our Institute, our publications, and our chapter programs in an organized fashion to provide better resources. Part of our dilemma is that we should define the goal first, then decide on the membership structure that will serve that goal. By discussing the structure ahead of a clear consensus on the goal, we are frustrating ourselves.

Should PTG be in the business of

training technicians? This debate has long raged among our members. Some of us believe that beginning technicians should get basic piano technology education through schools or apprenticeships and that PTG's programs should primarily serve the qualified professional technician. Others note that since we are now 40% Associates, if we want to maintain a professional standard as an association, we will have to act aggressively to promote our standard (namely our exam) and hence motivate and train the next generation of RPTs. As an association we are evolving as our membership grows and changes. We have some significant choices to make; if we wait and do not act, events will decide our fate for us. But if we choose and act, we can have a hand in our destiny.

I believe that RPTs and Associates need to share a common vision to further our progress. Associates must realize that PTG does not have the resources to provide a complete education in piano technology, but can certainly supplement and enhance anyone's learning. At the same time, RPTs must realize that today's Associates are tomorrow's RPTs—and PTG's future—and that by better organizing our educational efforts and goals, we all benefit.

We seem to be at a crossroad. As Yogi Berra once said, "If you don't know where you are going, chances are you'll end up somewhere else." Are we ready to set some goals and take up the challenge that seems to be presented to us at this point in our history? Should we get serious about training future RPTs? At root, this is what the category debate is really about. The membership structure we choose must serve our needs and desires; the reason we are having so much trouble with names is that we lack a clear set of prioritized educational and organizational goals.

We who serve on the PTG Board are committed to asking the question: where are we headed? Please join us in study of the survey data and in active discussion over the future of PTG. Vigorous debate over our educational goals will be healthy for us if we can come to consensus on a few clear, achievable goals. It appears that for most of us, creating more RPTs is a prime goal; let's discuss it, be sure, and then make it happen.

From The Home Office

Larry Goldsmith
Executive Director

Making Changes In This Old House

Did you ever live in an old house? In a new house, everything starts out fresh and shiny. And everything — fixtures, decor, plumbing, and so on — ages at the same pace, so even when it's no longer quite new, it all looks like it belongs together. For awhile, at least, everything works.

In an old house, things are quite different. There's a continuous process of decay and renewal, of problems that constantly need to be addressed. Things have different lifespans, and you wind up trying to find an avocado refrigerator to match the rest of your kitchen. You have to allocate and prioritize the work based on your resources. Will the roof hold out one more season while you fix those pesky plumbing problems? You get the idea.

And you have to live with the compromises other people have made, like the former owner who decided that there shouldn't be a wall between the dining room and the kitchen. You may wish he'd realized that the wall he removed supported the upstairs bedroom, but you can't undo history. All you can do is deal with today's problems and try to keep everything level.

We live in old houses because they have character and beauty, because they link us with a past that we value. Their age gives them value beyond that of a mere dwelling. They stand for something.

Like PTG. This is not a derogatory comparison — quite the opposite. PTG is obviously quite functional, and it's obviously worth preserving. But like an old house, there are constant adjustments that need to be made, and our organizational structure bears the mark of each Council meeting in our history. When a problem arises, it is dealt with according to the best thinking of the time. But things don't always work out as expected.

We say we're 36 years old, but that only reflects the merger that brought two earlier organizations together. Both of those organizations, the National Association of Piano Tuners and the American Society of Piano Technicians, brought their own structures and histories to the merger. We can actually trace our foundations back to the early years of this century.

So, like this old house, we are the product of decisions made to address the problems of the time. That these decisions were made with the best of intentions is immaterial. A house built when energy was cheap may require major compromises to adapt to modern times. An organization formed by a few hundred widely scattered piano tuners must undergo many changes if it is to serve the needs of several thousand professional piano technicians today.

What needs to be done? What's possible? The only answers to those questions come from the people who live in the house: the members. Through our Member Needs survey, through "town meetings" at seminars, conferences and chapter meetings, we're studying the situation. We have the blueprints — our Bylaws and other organizational documents. But before we pick up our tools and start raising a cloud of dust, let's think carefully about how we want the house to look when we're done. PTG will be around for a long time. We want the work we do in Milwaukee to prolong its life and increase its utility. Let's plan carefully.

Larry Goldsmith
Executive Director

KNOWLEDGE ON TAP

1993

Come See What's Brewing in Milwaukee

CONVENTION & TECHNICAL INSTITUTE

JULY 14 · 18 · 1993

MILWAUKEE WISCONSIN

Institute Update

We want to begin the month by taking another walk down North 3rd Street into Old World. (Remember Old World starts right across the street from the Hyatt Regency on the northeast corner). The first thing we see is the County Historical Center and Museum we wrote about in January. Next we see Usinger's Fine Sausage Factory. We can go in and purchase fine sausage and also see them making the sausages; however, my experience has always been if you see sausage being made you probably won't want to eat any, ever, and I do love sausages.

Next, there is the Wisconsin Cheese Mart, where we can also stop in to browse or purchase. Take a trip on the Edelweiss Tour Boats located right next door. There are several restaurants and eating establishments in this area. We have already listed several of them, so we'll save the best for last. Maders, at 1037 N. 3rd (&Highland).

Linda Marten touched on it last month in her fine article listing several nice places to eat. We ate brunch on a Sunday and I must say it was fantastic. We didn't chose the Viennese brunch (which looked great), but chose from the menu. They have one selection that includes some of everything on the menu, the three of us selected that and had a ball. After lunch or dinner you can slip off upstairs to their combination museum/gift shop where you will find all sizes and descriptions of antique and new beer steins and gifts. You could spend several hours here. I highly recommend Maders. In the other direction we also went to the Clock Steak House at 720 N. Plankton (& Wisconsin) about 4 blocks southeast from the hotel, it also was great, although we argued with the chef that the "Cajun" dish was not really Cajun.

We better get to talking about the Institute before you think all we did was eat. Do you remember the class in Philadelphia." When Steinway Meets Chain Saw?" Tom McNeil was the instructor. Well, Tom is back this year with "Clavichord: 15th Century Anachronism in the 20th Century." He has been doing some research at the Smithsonian Institution along with his teaching. You will see, hear, and play a real live clavichord. This should be a most interesting class on your busy schedule.

(You should be making a list, checking it twice, seeing who is naughty or nice. Woops! Wrong

month for that program.) Webb Phillips will help you take your customers to the land of enchantment—rouse their admiration—and charm them with your thoroughness, speed, and efficiency as you learn to do the impossible as well as common in-home repairs.

David Stanwood will entice you with his presentation of "Science of Wool, Felt, and Piano Hammers." He has requested everything for his classroom from a Steinway Grand to a live unsheared sheep, (We are trying , David.) Andre Bolduc is coming from Canada to teach us all about soundboards. A masterful class taught by a master of woods. Tim Farley, Norman Sheppard, and Trevor Stephenson will be bringing 5 pianos to the Institute in their presentation of "Tuning for Musical Expression." They will teach you to produce a variety of keyboard classic tunings from the 16th through the 20th century. You can learn to produce these tunings by ear or with the Sanderson Accu-Tuner. Professor Owen Jorgensen is driving up to present his class on "Historical Temperaments as an Art Based on the Aesthetics of Music." This class will also acquaint you with the historical tunings of the past years and help you tune these temperaments by ear with confidence. Norman Neblett is returning with a new class called "Figure It Out." Norman is a master instructor. He has been instructing for the last 36 years in annual national, regional, and one-day seminars. You will want to attend this class on making accurate estimates for the restoration of grand pianos without wasted time or lost profit.

Let's go shopping while in Milwaukee! The Grand Avenue Shopping Mall is attached to the Hyatt. It spans a four city block area of downtown with some of the top stores, Marshall Field's, Boston Store, The Cream City Market and 150 specialty shops and restaurants. The Mayfair Mall has exceptional stores, ambiance, and location with a striking multi-story atrium with flowing bamboo grasses and more than 160 stores and services. The Galleria West offers an upscale shopping center including a fine selection of local shops and services. Then there is a famous historic Third Ward, located at 203 N. Broadway, that offers a unique shopping opportunity for those looking for unusual gifts and fashions. Visit the eight art galleries, and many unique restaurants, located in this shopping area.

A once-in-a-lifetime opportunity for a lot of us will be the opportunity to visit the Schaff Piano Supply Company. They are located in the northwest suburb of Chicago (Lake Zurich) just 8 miles off I-94 from Milwaukee. We purchase a lot of piano products from these folks and it would be nice to see their operation. You have an invitation to drop in on your way to or from the Convention; add it to your itinerary.

Many of the activities and Institute classes will take place in the Hyatt Regency Hotel that is perfectly suited for the occasion. We are also having Institute classes in the MECCA (Milwaukee Exposition, Convention Center and Arena). The exhibits will be in the MECCA with a great location. All in all this is one of the best situations that we have been in for our Piano Technicians Guild's International Convention.

We want you to have the best experiences of your life because we have . . . KNOWLEDGE ON TAP IN MILWAUKEE '93.

We invite you to COME SEE WHAT'S BREWING IN MILWAUKEE. We will be waiting for you.

Gary A. Neie, RPT
1993 Institute Director

Trains, Planes & Automobiles: Getting Around in Milwaukee

Linda & James Martin • Milwaukee Chapter

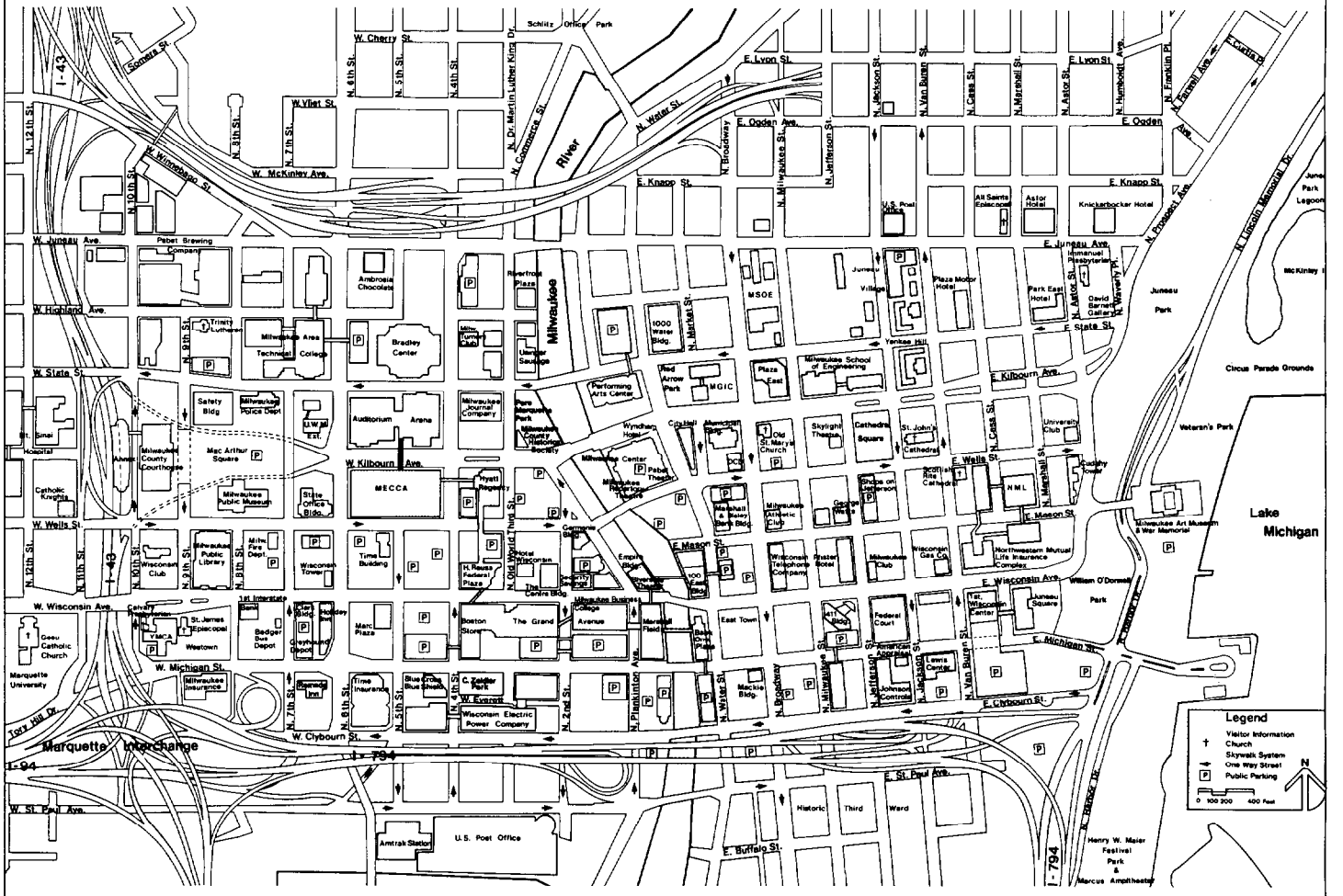
This final article on the sights and sounds of Milwaukee, the site of the 1993 Institute, deals with the very practical topic of transportation. Milwaukee's extremely manageable airport, street and freeway systems, and traffic belie the fact that well over a million people live in the metropolitan area. Nevertheless, the following information and the map that accompanies it (page 12) provides advice on getting to and getting around Milwaukee and may help conventioneers and their families in planning their free time.

There are three ways to get to the Hyatt and other downtown hotels from General Billy Mitchell International Airport—about a fifteen minute drive from downtown—for participants flying into Milwaukee. Taxi service costs about $15, while the AAA Shuttle Service charges $6.50 per person and departs from just outside the airport's baggage claim area. The least expensive option is the "Number 8" bus in the Milwaukee County Transit System; adult fares are $1.10. Buses leave every twenty-two minutes and deposit passengers at the corner of 6th Street and Kilbourn Avenue, within two blocks of the headquarters hotel. Visitors arriving by train can walk, catch a cab, or take the "Number 57" bus to the hotel, which is only five blocks from the Amtrak station. Finally, those who come into town on Greyhound buses can easily get to the Hyatt on foot; the bus station is only three blocks from the hotel.

Renting a car will, of course, enhance your mobility during the convention; all the major car rental agencies operate out of the airport, while Hertz also has an office at the Amtrak station and Budget Rent-a-Cars are available just a block from the Hyatt. The transit system—recently named the best line in the nation—offers routes that take passengers to most of the local attractions, restaurants, and shopping areas mentioned in earlier articles.

Once at the convention, the host chapter table will provide phone books, restaurant lists, and information on attractions and bus routes, as well as answers to other questions regarding transportation and sightseeing. In the meantime, feel free to contact any Milwaukee Chapter member with your questions prior to your arrival in the city.

See you in July!



Downtown Milwaukee

Map courtesy of Milwaukee Redevelopment Corporation

Be sure to attend the 1993 PTG Convention Golden Hammer Banquet scheduled for Saturday, July 17 Hyatt Regency Ballroom

Make Your Reservations Today...
Limited seating is available

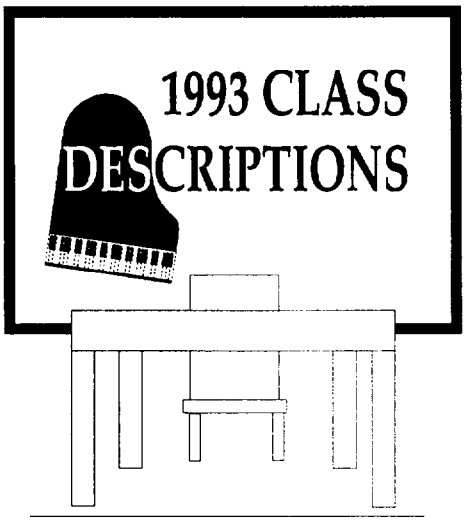
Achieving the Complete Piano Service
Dave Swartz & Kevin Cory
Cory Keyboard Products
Increase your profits and business profile through sound marketing. This class covers the technicians professional image, advertising, suggestive selling, product sales, and doing that "little extra" that translates to $$$$$$. The Cory Product line will be demonstrated as well as complete piano care and cabinet maintenance. Stop starving and get your piano business on track!

Action Centers:
The Secrets of Consistent Touch
Don Mannino
Young Chang
This class is in two parts, the first focusing on how action centers work and the second demonstrating an efficient and highly accurate method for recentering using broaches. The discussion will include evaluating the amount of friction needed for any given action part, the effects of pinning on touch and tone, dealing with the various types of bushing cloths encountered, and a demonstration of flange rebushing.

Action Geometry, Phase 1
Willis Snyder
Reading-Lancaster, PA Chapter
From keybed to string line, an evaluation of existing set-up and conditions. Both corrective and realignment procedures will be addressed in depth. Demonstrations provided.

Addressing Battle Ground Pianos
Joel Jones
Madison, WI Chapter
Fast and economical ways to prevent problems on heavily used instruments. From practice pianos to concert grands, these repair methods keep the keys moving during non-stop use.

Administering the PTG Technical Exam
Mike Carraher
Reading/Lancaster Chapter
All aspects of technical testing will be covered, including helping examinees



1993 Technical Institute Class
& Mini-Technical Descriptions

prepare, gauging their readiness, acquiring exam props, running the exam and handling the paperwork. (RPTs only)

Advanced Aural Tuning
Virgil Smith
Chicago, IL Chapter
Finally, after many years, a chance to observe a complete top quality aural tuning at a national convention, with every tuning step carefully explained from a unique temperament that allows the piano to determine early the best speed for the particular instrument to the highest C and the lowest A. We will also discuss beat relationships and octave tuning that assures a brilliant tuning and a method for striking the keys powerfully without distortion so that beats can be heard more clearly. This class should be helpful for both aural and visual tuners at every level, especially in preparing for the tuning exam.

An Illustrated History of Piano Manufacturing in North America
Charles P. Huether
New Jersey Chapter
Charles will draw on his interest and knowledge of history, and his vast resources for pictures and stories to bring you to an integrated picture of piano manufacturing from the earliest years to the present in the United States and Canada. It's always new and different.

Aural Temperament
Rick Baldassin, Al Sanderson
Inventronics
A new sequence of tuning the temperament by ear leads to a relatively foolproof way of finding out what kind of thirds, fourths, and octaves are needed to fit a given piano. As a result, backtracking is greatly reduced, and the temperament tunes the same way regardless of inharmonicity or funny beat rates.

B E T - Basic Elements of Tuning
Jim Coleman, Sr.
Phoenix, AZ Chapter
Basic elements of tuning will deal with tuning pin, string and key considerations. Theory of harmony will be discussed as applied to tuning unisons, octaves, and tempered intervals. You will learn where to listen for beats. Minimum hands-on training. If you are relatively new in business, you can BET this class is for you. Pull the lever, tap into this one.

Center Pins - A Different View
Isaac Sadigursky
Los Angeles, CA Chapter
Isaac's class on center pins will show you everything you want to know about this important subject. He will show you some high speed pictures in slow motion so that you can see what takes place in different circumstances. You will go from this class with a better understanding of how you can be more efficient at your everyday work.

Clavichord: 15th Century Anachronism in the 20th Century
Thomas McNeil
Buffalo, NY Chapter
See, hear, and play a real live clavichord. This charming early predecessor of the piano holds lessons for us in keyboard instrument technology. And it offers a welcome quiet musical alternative in an age of aural overload. Tom McNeil, chief piano technician for the State University of New York, Fredonia, presents material from his course on clavichords and from recent research in the clavichord collection of the Smithsonian Institution.

Institute Class Descriptions Continued

College and University Technicians Forum
Ken Sloane
Oberlin Conservatory
The first will consist of an open forum moderated by Ken Sloane. He will "kick-start" discussion (with Tom McNeil possibly assisting) offering examples of how *The Guidelines For Effective Institutional Piano Maintenance* have helped technicians to develop successful programs for the institutions they serve. After that, anything goes (almost anything) so bring your good questions, your unbelievable horror stories, and personal recipes for success and harmony.

Ken has scheduled another open forum for the second period and will specifically address the technical problems (administrative complications will be discussed to some extent) associated with setting standards for voicing performance pianos. He would particularly like to focus on performance pianos that are placed in many different kinds of concert situations (e.g. pianos involved in solo recitals, concertos, small ensembles, solo voice or instrument accompaniment, etc.) and will ask several people to give short presentations about how to approach this controversial area of service at their schools.

Dampers
The Yamaha Team
Yamaha Corp. of America
In piano music stopping the sound is just as important as starting it. So, we take little blocks of felt and ask them to do an almost impossible job. But when they don't work, what do you do? In this comprehensive and detailed class, the Yamaha Team will show you the principals of how dampers work. You will come away with a better understanding of this vital realm of piano work, as well as many of the secrets for correcting damper problems.

Disklavier Master Class
Bill Brandom and Dean Garten
Yamaha Corp. of America
This class is limited to those who attended the Disklavier Service Seminar. If you attended this seminar, you won't want to miss this class.

Efficient Shop Procedures: Part 1
Bill Spurlock
Spurlock Specialty Tools
A slide show and discussion showing how to use common shop power tools and easily made jigs to do such jobs as: installing hardwood inserts to repair worn balance pin holes in keys; re-sawing lumber with the bandsaw to make thin woods for bridge capping, etc.; improving poor key mortises prior to rebushing; and building and using a glass bead blasting booth for cleaning action and parts.

Efficient Shop Procedures: Part 2
Bill Spurlock
Spurlock Specialty Tools
A hand-tool version of the above. This class will show how to assembly-line your work to achieve predictable, consistent results quickly. Covers rebushing of grand damper guide rails and other parts; gang-replacement methods for action cloth on wippens stickers, etc.; removal and replacement of grand backchecks; traveling of grand shanks; and replacement of bad synthetic material on upright hammer butts.

Everyday Voicing
Bob Davis and Dale Erwin
Modesto, CA Chapter
Most of us work on hammers with a wide range of quality and style, and much untapped potential. Bob and Dale demonstrate principles common to all types, including how to tell what is happening inside a hammer from the sound it is making, with specific techniques for increasing power, sustain, and color range in original and replacement hammers.

Figure It Out
Norman Neblett
Los Angeles, CA Chapter
A new participation class by a master instructor. The goal will be to create an accurate estimate and a comprehensive rebuilding strategy for the restoration of a grand piano without wasted time or lost profit.

Grand Concert Service and Regulation
Kent Webb
Baldwin Piano Co.
This class will take a look at servicing critical performance grands with techniques that are used in Baldwin factories and proven techniques in concert settings. Regulation, voicing, and trouble shooting are covered.

Grand Hammer Hanging, Your Way, My Way
Richard Kingsbury & Tim Dixon
Milwaukee, WI Chapter
Richard and Tim will teach you how to sell the job and select the proper hammers. You will learn how to analyze the old hammers and get the correct measurements. You will discover what the old hammers are telling you. You will learn what to do with the new hammers in boring them, traveling, gluing, pre-voicing, trimming & tapering moldings along with all the correct hammer hanging procedures. Come see what you can discover from these two top performing technicians.

Historical Temperaments As An Art Based on the Aesthetics of Music
Owen Jorgensen
Lansing, MI Chapter
The purpose of this class will be to inform piano technicians on the basic rules of music theory that guided all temperament practices in the past. Gaining an understanding of this will enable technicians to tune historical temperaments by ear with confidence.

I Hate the Way My Piano Sounds
Nick Gravagne
New Mexico Chapter
Good piano tone—what is it? How does the technician go about getting

good tone either in the rebuilding process or in the voicing process? Accurate and fast evaluation of a piano in need of rebuilding or voicing is a must if the technician is to win the confidence of the customer, as well as deliver a quality job. This class will cover, "How to judge tone. How to physically inspect the piano in the shortest possible time. What to look for in terms of crown, bearing, and hammers. How to discuss the findings to the customer in understandable terms", and much more.

If Tone - Why Hammers?
Ari Isaac
A. Isaac Pianos
If hammers and how to get the most out of them is a subject you're interested in, how hammers are made, what felt blends are used, hammer mass, weight, hammer shape in relation to action regulation, how hammers produce tone and how you can control tone production better and easier, hammer voicing and which part of the hammer produces which part of the tone, then you cannot afford to miss this class. Understanding the hammer and knowing how to get the most out of it makes the difference between good results and outstanding results—and the outstanding result brings you more money and more referrals.

Introduction to the Disklavier
Bill Brandom and Dean Garten
Yamaha Corp. of America
This class will begin with a short overview of the functions and various capabilities of Disklavier pianos. Following this, you will receive the information necessary to perform each aspect of acoustic service to the three different types of Disklavier pianos. Diagnostic programs and tests incorporated in each piano will be covered, along with the basics of Disklavier system service.

Learn How To Do the Impossible, As Well As Common In-Home Repairs
Webb Phillips
Webb Phillips & Associates
Take your customers to the land of enchantment—rouse their admiration—charm them with your thoroughness, speed, and efficiency by learning how to do the impossible, as well as common in-home repairs. Make simple repairs to drop action wippens or acrosonic stickers without removing the action. Getting more out of that old pinblock by making it new again. Simple and efficient ways of repairing a damaged piano corner, or making a new one. Making the rim of a grand piano or side of a bench as good as new, where the hinge has broken and destroyed the wood. Repairing or making a new bird's-eye. How to make worn out screw holes better than new, repairing veneer, and bridges. Repairing a split top by laying in a new piece of wood in just a few minutes, and much more as time allows.

Making the Renner Hammer
Rick Baldassin
Renner USA
In this class, the process of hammer making is covered in great detail - from the selection of the wood for the hammer moldings, through the cutting and milling of the hammer felt, to the pressing of the hammers themselves. With the help of slides from Rick's recent trip to the Renner factories, as well as drawings of critical operations, this class will show you the philosophy and execution of hammermaking by one of the world's premier hammer makers.

Marketing with PTG Business Aids
Keith Bowman
SC Pennsylvania Chapter
Enhance your business success by using PTG marketing materials. Learn alternative ways to promote your skills and services to your clients and prospects. Learn how to benefit from local and nation-wide efforts to strengthen the piano industry. See a variety of marketing materials used by small businesses to gain new clients and reinforce loyalty in present clients.

MIDI for Non-MIDI Persons
Norman Heischober
Long Island Nassau, NY Chapter
Robert Sadowski
Erie, PA Chapter
Norm will illustrate why it is important for piano technicians to understand and use this new, fast growing technology. This will be a basic introduction to MIDI using lecture, hand-outs, video, and hands-on experience in the use of MIDI equipment. Keyboards, synthesizers, drum machines, equalizers, and computers will be demonstrated. Piano technicians who are musicians can enhance their income by the understanding and use of MIDI. Other technicians can become conversant with customers who ask about MIDI.

New Damper Action Installation: The Final Step in Complete Action Replacement
Rick Baldassin and Chris Robinson
Renner USA
The damper, or back action has often been overlooked or neglected during piano action restoration, although the parts themselves would warrant replacement simply because no replacement system was available. In response to this need, Renner has produced a new underlever system kit, and in this class, Chris and Rick will teach you how to assemble and install it.

Partial Hearing: Your Greatest Asset
John Stebbins
Western Massachusetts Chapter
Awareness of partials and inharmonicity is central to the most fundamental job we have: tuning unisons. How are your unisons? Unison tuning is difficult, but you will learn how to make the job easier and better. What is a stretched octave? Not what you think it is. This class is an eye opener. It is designed to illuminate the basic concepts at the heart and soul of our profession: partials and inharmonicity. Come find out why you do what you do and how to do it more easily.

Institute Class Descriptions Continued

Piano Design for the 21st Century
Del Fandrich, Darrell Fandrich, Chris Trivelas
Fandrich Piano Co.
This class will introduce the Fandrich U-122 Vertical Piano, designed by Del Fandrich. The piano action was developed by Darrell Fandrich and Chris Trivelas. See and hear, firsthand, how innovations in soundboards and ribs, a unique back assembly and the patented new upright action were mated to build a totally new concept in upright pianos.

PianoDisc: A through Z On the System
Mark Burgett
PianoDisc
An overall survey on installation of the system. Adjustments, service techniques and regulation as they affect the playing and recording capabilities of PianoDisc.

Pinblock Plugging
Tim Hast
Oklahoma Chapter
Tim will demonstrate how to use hardwood plugs to recondition a badly worn pinblock. His method of plugging will work on spot repairs or complete pinblocks. Tim will also give you some insight into building a business, and moving from a one-person service to a business with employees and the logistics of hiring workers and providing employment for them.

Pinblock Removal and Replacement, Soundboard Repairs, and Plate Bearing Placement
Cliff and Tony Geers
C.A. Geers
Come work with the masters to remove a pinblock, participate in their demonstration of soundboard repair, and discover the proper method for plate bearing placement.

Practical Appraising and Evaluation
Bob Russell
Cleveland, OH Chapter
We will cover how to appraise pianos for your customers that are buying, selling, or need insurance appraising. We will include the dos and don'ts of appraising. Everyone will get the opportunity to appraise a piano.

Preparing for the PTG Technical Exam
Mike Carraher
Reading Lancaster, PA Chapter
A walk through the test procedures plus helpful hints on basic regulating and repair skills. A popular class everyone should attend.

Preparing for the PTG Tuning Exam
Al Sanderson
Inventronics
Al Sanderson will teach this class just once during the convention. You will learn how to better prepare yourself for this important part of the PTG Exam. You will gain new insights into proper piano tuning, hammer technique, setting the pins, and tuning stability. Be sure to get to this class early as it will fill up fast.

Professional Key Recovering Done By the Average Technician
Howard Jackson
NC Louisiana Chapter
If you enjoy shop work, you can learn to do key recovering using regular shop tools that you may already own. This is a how-to-do-it class. Those who have seen this demonstration in the past have gone back home and are amazed at how really easy it is to do such professional work. It's a time saver to do it yourself.

Project a Professional Image
David Hulbert
Milwaukee, WI Chapter
This class will include the many benefits of projecting a professional image and how PTG members can present themselves to the public in ways to enhance themselves and their business.

Quality Grand Action and Key Restoration for Fun and Profit
Wally Brooks
Brooks, Ltd.
Learn the highly profitable process of rebuilding the grand action using original or replacement parts. Improve your quality, shorten your work time and raise your profit. This class taught by a seasoned technician and instructor.

Reliable Grand Regulating
Danny Boone
Heart of Texas Chapter
The first half of this three hour class will cover preparation of the action and piano for regulation. Most factory manuals and classes do not cover this phase because they are dealing with new pianos. The second half will deal with aligning parts and setting action movements to specifications. Learning to determine valid specifications when none exist, will be emphasized. Accuracy and efficiency are equally important, and the methods presented will produce both. Each step will be demonstrated on an actual grand piano action.

Resolving Customer Complaints
Evelyn Smith
Central North Carolina Chapter
Evelyn will present information about the importance of customer service, which will include techniques for resolving conflicts based on a 6-step plan. The class will also practice the techniques by doing 3 supervised role plays, based on actual customer-technician situations.

Restoring the Vertical Keys and Action
Richard Elrod
Samick Music Corporation
Richard will instruct you in inspecting the keys and action, replacing worn and broken parts, eliminating squeaks and buzzing. He will also demonstrate the adjustment of the keys and action to specification.

Retrofitting the Grand Action New Parts on Old Frame
Chris Robinson and Rick Baldassin
Renner USA
Many different action designs have been produced over the years. Moreover, manufacturers have changed their action dimensions, as well. In this class, Chris and Rick will teach you how to pick the correct action parts for the job, including assembling a "universal wippen" if no exact replacements are available.

Secrets of the Superglues
Ed Dryburgh
Dryburgh Adhesive Products, Inc.
Ed gives an overview of the specific uses and applications for cynoacrylate adhesives in your piano business. Learn how to cut time and even generate business while offering quality and long lasting repairs.

Shaping Up Can Be Painless
Ruth McCall
McCall Enterprises
This class will consist of instruction and demonstration in the use of epoxies in piano repair as well as the newest techniques in piano hammer shaping using the minibelt sander.

Shop Procedures for Fun & Profit
Jim Harvey
Western Carolinas Chapter
Jim's class will cover a multitude of interesting "tools for the trade", gadgets galore, and tips to save you time and make you money. You will pick up ideas that you can incorporate into your every day work that will make every job easier and more interesting. Pick his brain to gain some of those years of knowledge obtained from working with major manufacturers, and a variety of field experiences. You will discover that working can actually be fun while you are earning a living.

Shop Tips for the Rebuilder
David Snyder
Reading-Lancaster, PA Chapter
Tips geared to help the technicians in shop situations to work faster, safer, and at a higher quality level.

Soundboards - What You Need To Know
Andre Bolduc
Les Pianos
To what extent should one preserve the existing soundboard? The absence of cracks does not guarantee the validity of a soundboard young or old. Helps to check the merits of an old soundboard. Tricks & tips for a professional repair. A masterful class taught by a master of woods.

Stringing: Tension, Torque, and Tuning Pins
Joel & Priscilla Rappaport
Austin, TX Chapter
Shows how to achieve professional results. Methods and procedures direct from former factory stringers to finish within a reasonable time frame. Try your hand at some new techniques in class. Topics will include reaming the block, torque of tuning pin in the block, drilling the block, and how to get uniformity in coils and pin height.

Taking Care of Business
Vivian Brooks
Brooks, Ltd.
How to figure your "cost per hour" to be in business. This 1 1/2 hours is jam packed with vital information to help you work smarter - not harder.

Temperaments of the Masters
Randy Potter
Randy Potter School
Randy will teach the temperaments of Jim Coleman, Sr., Franz Mohr, Ernie Juhn, Randy Potter, the late George Defebaugh, and European "Great and Small", illustrating how to use either 4ths and 5ths or 3rds and 6ths effectively - depending on how you hear. He will end the class by demonstrating how to use the Sanderson Accu-Tuner or Yamaha PT-100 to help you learn to become a better aural tuner. Handouts include details of each temperament.

The Alexander Technique
Wade Alexander
Southern Tier, NY Chapter
The Alexander Technique is a re-education technique which helps us to learn to be aware of what we are doing. We (i.e. Piano Technicians), perform a variety of mental and physical tasks which are very difficult. Wade Alexander a Certified Teacher of the Alexander Technique, will demonstrate how a study of the Alexander Technique is helpful for us to do our work with less stress and wear and tear on our bodies. Two tools he has developed as a result of discussions during his class and private teaching at the Philadelphia Convention will be demonstrated.

The New Steinway Action
Karl Roeder
Concert Technician
Steinway & Sons
Recently, Steinway & Sons announced the production of an improved grand action which is now available in all american Steinway pianos. Karl will take a close look at these new action components and will offer common sense advise straight from the Steinway Concert Department in New York. If you work on Steinways, you will appreciate this class.

The Science of Wool, Felt, and Piano Hammers: Part 1; Theory
David Stanwood
Boston, MA Chapter
Wool felt is a vital component in the construction of pianos yet it remains one of the least understood. The basic wool science class gives the technician fresh insight into the properties and origins of wool felt. Of particular interest is a fascinating presentation of slides taken with a scanning electron microscope and explanation of Mr. Stanwood's unified approach called "Gradient Zone Voicing."

The Science of Wool, Felt, and Piano Hammers: Part 2; Practice
David Stanwood
Boston, MA Chapter
This class explores traditional as well as some eyebrow raising non-tradi-

Institute Class Descriptions Continued

tional techniques of voicing different hammer types based on the "Gradient Zone System" of voicing. Presented are a variety of techniques for selecting, cutting, gluing, steaming, ironing, pressing, and rejuvenating wool felt. Why aren't piano hammers made out of nylon? What does a needle actually do to the inside of the hammer? Why is wool felt so special? How do you tell good felt from bad felt? What effect does steam have on felt? How do technicians unwittingly damage and shorten the life of hammers and other felt? These and many other questions will be answered in these two classes.

The Stigma of Hearing Loss
Joe Garrett
Portland, OR Chapter
In this unique presentation Joe Garrett will explore the causes of hearing loss, and suggest remedies and safety precautions to prevent hearing loss.

Tool Sharpening - Resurrecting A Cutting Edge
Kevin & Janet Leary
Cleveland, OH Chapter
A discussion of tool metal composition, sharpening with water vs oil stones, choosing quality chisels and blades. A variety of step-by-step techniques for achieving a fine cutting edge will be discussed and demonstrated: grinding, lapping plates, waterstone pond, fixtures, jigs, and more. Bring your own chisels for hands-on experience, as time permits.

Tools, Tool Kits, and Field Repairs
Ron Berry
Indianapolis Chapter
Ron will show you the most efficient way to do not-so-normal repairs in the field, the tools needed and ways to carry these tools. He will demonstrate some of the dos and don'ts of in field repairs.

Troubleshooting Vertical and Grands
Roger Weisensteiner
Kimball Piano Company
Roger will be teaching a three hour class on vertical and grand troubleshooting, which will be detailed with slides and overheads, also individual props to show the specific problem and repair procedures. He will also distribute copies of the Kimball grand and upright troubleshooting manuals to everyone attending the class.

Tuning for Musical Expression
Tim Farley, Norman Sheppard, Trevor Stephenson
Madison, WI Chapter
Help your customers select a tuning for the music they love. This class will be divided into two sessions. In the first session, keyboard classics from the 16th through the 20th centuries will be performed in a variety of tunings. These demonstrations will show how subtle intevalic adjustments can powerfully enhance musical expression. In the second session, learn how to produce these tunings by ear and with the Sanderson Accu-Tuner.

Turbo Charging The Vertical Action
Jack Wyatt
Dallas, TX Chapter
As grands of quality become extremely rare and priced out of reach of the vast majority of people, the need for high performing upright pianos will increase. For many years, the sound of quality upright pianos was equal to, or better than, medium quality or small grands. However, the performance of the action was not equal to grand actions. This method of regulation will help close that gap. The goal of this procedure is to improve repetition, dynamic range and repeat without allowing the key to reach it's normal height. This method will accomplish most, if not all, of these desired results.

Ups and Downs of Grand Dampers
John Zeiner
South Jersey Chapter
John's class will cover reconditioning from the pedals to the damper head. Felt selections, installation, wire bending, regulation, damper assembly upgrade, troubleshooting damper leaks, and a short cut for setting up damper timing, also what has to be done to the strings and action for quality damper work.

Voicing the Renner Hammer
Rick Baldassin
Renner USA
Hammer voicing can be frustrating, time consuming, and an unfulfilling job if the hammers are poorly designed, or if the voicing procedure is not well understood. In this class, Rick will present a simple, yet logical voicing procedure, which, when applied to a quality hammer, will produce consistent, predictable, and desirable musical results in a very reasonable amount of time.

What's New In Humidity Control
Steve Smith and Robert Mair
Dampp-Chaser Electronics
We will show the latest products and product improvements in humidity control including the system designed for Disklaviers and player pianos in which space normally occupied by humidity control equipment is filled with electronics. We will demonstrate both vertical and grand installation and discuss some aspects of improvement in Dampp-Chaser equipment that provides for greater installation efficiency. We will discuss the latest promotional ideas we have received from the field. A new VCR tape for showing to clients will also be screened.

Mini-Technical Class Descriptions

Accu-Tuner to the Max!
Dean Reyburn
W. Michigan Chapter
Here's a class demonstrating the use of IBM or MAC with the CHAMELEON program. Find out how to create and customize tunings (equal or

historical temperaments), transfer the tunings to the Sanderson Accu-Tuner via MIDI, and aurally verify CHAMELEON and FAC tunings.

Bass Strings: What You Should Know About Them
Ari Isaac
Toronto
Discover why a well designed set of bass strings is so important in determining the sound of the entire piano. There's more to a good set of bass strings than "perfect" scale calculations. We will look at the choices and methods for making wound strings and how these criteria can make for a great sound or just an average sound.

Computerized Piano Service Management
Jim Coleman, Sr.
Phoenix, AZ Chapter
This class will introduce you how a computer helps in scheduling, reminding, mailing, estimating, making appointment changes, invoicing, income tracking, inventory tracking, plus many other things. Novice computer users will like this!

Hearing and Voicing
Yat Lam Hong
W. Michigan Chapter
How a technician hears can affect the way he/she voices the piano. Learn how to deal with the resulting complications.

The Heart of a Temperament
Michael Kimbell
San Francisco, CA Chapter
A brief, simple explanation of how music relates to temperament, together with a demonstration of Thomas Young's solution to temperament problems.

The Ins and Outs of Vertical Dampers
Mary Cushing Smith
Austin, TX Chapter
A brief overview of vertical damper installation, regulation, and troubleshooting.

Ivory Keytop Restoration
Steve Brady
Seattle, WA Chapter
Steve will present a method of repairing chipped ivories using dental techniques.

New Keys with Original Keyframe: A Professional Alternative
Joel & Priscilla Rappaport
Austin, TX Chapter, Kluge Keys
Old keys recovered for the tenth time and rebushed for the twentieth time just don't make it! We will describe an easy method for replacing only the keys, using the original keyframe. This will increase the value of the piano, please the customer, and enhance your reputation.

Pitch Raising
Willem Blees
St. Louis, MO Chapter
A discussion of pitch raising philosophy, some dos and don'ts, and a brief description of methods.

Restringing in 30 Minutes
Sid Stone
Golden Gate, CA Chapter
This class includes a list of the tools and supplies needed for restringing, along with specific applications.

Shooting Trouble Dampers
Brian DeTar
Portland, OR Chapter
What to do after you've said *?#?!! and before you get out your matches. Don't let those grand dampers get the better of you!

Shop Safety
Doug Neal
Siouxland, IA Chapter
A presentation and discussion of shop behavior for the protection of the worker's life and essential body parts.

Stay Put!
Christine Lovgren
Boston, MA Chapter
A brief overview and discussion of some of the obstacles to a stable tuning, including torque, torsion, flex, and points of friction...practical tips on how to deal with these obstacles.

This Can Feel And Sound Grand
Dick Bittinger
Reading-Lancaster, PA Chapter
Simple little adjustments or a touch-up regulation can do wonders for your customers' pianos. They will really appreciate your good work and willingly pay you top dollar.

Troubleshooting Pedal Systems
Steve Brady
Seattle, WA Chapter
Techniques for finding and fixing a variety of the most common pedal system problems.

Tuning the Top
Paul Monroe
Orange County, CA Chapter
An SAT analysis of three methods for tuning F6 through C8.

Vertical Escapement
Robert Erlandson
Nebraska Chapter
This class will focus on setting the escapement and dealing with vertical escapement problems. Bring your special problems for discussion.

Why Knot?
Bruce Stevens
South Bay, CA Chapter
Here's a great opportunity to learn some string splicing techniques. Bruce will demonstrate the most popular knots and you will learn to tie them yourself with materials provided. Also included will be a handout for further study.

DON'T STOP HERE!

On pages 20 & 21, you will find a complete schedule of the classes just described.

Spend some time reviewing, picking out the classes you will want to be sure to attend...then turn to page 22 and complete the 1993 Convention and Technical Institute Registration Form.

Don't let the time pass you by—*Early Bird Discounts are over on June 18, 1993.*

1993 Technical Institute Class Schedule

	1st Period	2nd Period	3rd Period	4th Period
Thurs.-Sat.	8:00-9:30	10:30-12:00	1:30-3:00	4:00-5:30
Sunday	8:00-9:30	10:30-12:00		

○ 1 class period

⬭ 2 or more class periods

Regional and Committee Meetings will be held during 1st period, Friday

INSTITUTE CLASSES AND INSTRUCTORS	THURS-15				FRI-16				SAT-17				SUN-18		ROOM
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
Achieving the Complete Piano Service/Kevin Cory/Dave Swartz				○						○					E. Octagon 4
Action Centers: The Secret of Consistent Touch/Don Mannino				○					○						E. Octagon 10
Action Geometry - Phase 1/Willis Snyder							○						○		Lakeshore A
Addressing Battleground Pianos/Joel Jones			○												Lakeshore A
Addressing Battleground Pianos/Joel Jones												○			Lakeshore B
Administering the PTG Technical Exam-RPTs Only/Mike Carraher									⬭						Executive C
Advanced Aural Tuning/Virgil Smith	⬭						⬭								E. Octagon 5
An Illustrated History of Piano Building/Charles Huether	○									○					Executive B
Aural Temperament/Al Sanderson/Rick Baldassin			○			○									Executive C
BET-Basic Elements of Tuning/Jim Coleman, Sr.						○							○		Lakeshore C
Center Pins - A Different View/Isaac Sadigursky				○						○					Lakeshore B
Clavichord:15th Century Anachronism in 20th Century/T. McNeil							○							○	Executive C
College and University Technician's Forum/Ken Sloane											⬭				E. Octagon 5
Dampers/Yamaha Team	⬭										⬭				E. Octagon 3
Disklavier Master Class/Bill Brandom/Dean Garten			⬭												E. Octagon 3
Efficient Shop Procedures-Parts 1 and 2/Bill Spurlock	1										2				E. Octagon 4
Everyday Voicing/Bob Davis/Dale Erwin			⬭										⬭		E. Octagon 5
Figure It Out/Norman Neblett	⬭								⬭						Regency A
Grand Concert Service and Regulation/Kent Webb		○							○						Executive B
Grand Hammer Hanging/Richard Kingsbury/Tim Dixon						○									E. Octagon 2
Grand Hammer Hanging/Richard Kingsbury/Tim Dixon														○	E. Octagon 3
Historical Temperaments As An Art/Owen Jorgensen						○								○	Executive B
I Hate The Way My Piano Sounds/Nick Gravagne						⬭			⬭						E. Octagon 2
If Tone - Why Hammers?/Ari Isaac	○										○				Executive D
Introduction to Disklavier/Bill Brandom/Dean Garten						○							○		E. Octagon 3
Learn Impossible and Common In-Home Repairs/Webb Phillips						⬭							⬭		Lakeshore B
Making The Renner Hammer/Rick Baldassin	○										○				E. Octagon 2
Marketing With PTG Business Aids/Keith Bowman	⬭														Lakeshore B
MIDI For Non-MIDI Persons/Norm Heischober/Bob Sadowski							○		○						Executive D
Mini-Technicals	⬭					○		○			⬭				E. Octagon 10
New Damper Action Installation/R. Baldassin/C. Robinson								○							Regency D
New Damper Action Installation/R. Baldassin/C. Robinson														○	Regency C
Partial Hearing: Your Greatest Asset/Jack Stebbins						○						○			Executive D
Piano Design For The 21st Century/Del Fandrich/Darrell Fandrich									⬭						E. Octagon 5
Piano Design For The 21st Century/Del Fandrich/Darrell Fandrich													⬭		Regency B
PianoDisc A through Z On The System/Mark Burgett	⬭												⬭		Regency D
Pinblock Plugging/Tim Hast												○		○	Lakeshore A
Pinblock Removal and Replacement/Cliff &Tony Geers							⬭						⬭		E. Octagon 4
Practical Appraising and Evaluation/Bob Russell				○						○					Gilpatrick ABC
Preparing For The PTG Technical Exam/Mike Carraher													○		Executive C
Preparing For The PTG Tuning Exam/Al Sanderson							○								Executive C
Professional Key Recovering/Howard Jackson	○							○							Lakeshore C
Project A Professional Image/Dave Hulbert								○			○				Lakeshore A
Quality Grand Action and Key Restoration/Wally Brooks							⬭		⬭						E. Octagon 3
Reliable Grand Regulating/Danny Boone			⬭										⬭		E. Octagon 2
Resolving Customer Complaints/Evelyn Smith				○										○	Executive D
Restoring the Vertical Keys and Action/Richard Elrod	○										○				Executvie C
Retrofitting the Grand Action/R. Baldassin/C. Robinson							○								Regency D
Retrofitting the Grand Action/R. Baldassin/C. Robinson														○	Regency C
Secrets of the Superglues/Ed Dryburgh				○			○								Lakeshore A

INSTITUTE CLASSES AND INSTRUCTORS	THURS.				FRI.				SAT.				SUN.		ROOM
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
Shaping Up Can Be Painless/Ruth McCall							●						●		Executive B
Shop Procedures For Fun and Profit/Jim Harvey			●				●			●					E. Octagon 10
Shop Tips For the Rebuilder/David Snyder			●						●						Gilpatrick ABC
Soundboards-What You Need To Know/Andre Bolduc						●					●				Lakeshore B
Stringing: Tension, Torque and Tuning Pins/J & P Rappaport							▬						▬		Regency A
Taking Care of Business/Vivian Brooks		●											●		Executive D
Temperaments of the Masters/Randy Potter				●				●							Executive B
The Alexander Technique/Wade Alexander			●											●	Lakeshore C
The New Steinway Action/Karl Roeder							●			●					Lakeshore C
The Science of Wool, Felt, Hammers: Practice/David Stanwood		●										●			Gilpatrick ABC
The Science of Wool, Felt, Hammers: Theory/David Stanwood	●										●				Gilpatrick ABC
The Stigma of Hearing Loss/Joe Garrett								●		●					Executive D
Tool Sharpening-Resurrecting A Cutting Edge/K. & J Leary			●						●						Lakeshore B
Tools, Tool Kits and Field Repairs/Ron Berry		●										●			Lakeshore C
Troubleshooting Verticals and Grands/R. Weisensteiner	▬								▬						Lakeshore A
Tuning for Musical Expression/Farley, Sheppard, Stephenson	▬								▬						Regency B
Turbo Charging the Vertical Action/Jack Wyatt				●					●						Lakeshore C
Ups and Downs of Grand Dampers/John Zeiner			●						●						E. Octagon 4
Voicing the Renner Hammer/Rick Baldassin		●										●			E. Octagon 2
What's New In Humidity Control/S. Smith/B. Mair			●									●			Executive B
Chapter Symposium							●								Gilpatrick ABC

Mini-Technicals

Coordinator-Ray Chandler **Mecca: E-10**

	Thursday						Friday					
	8:00	8:30	9:00	10:30	11:00	11:30	10:30	11:00	11:30	4:00	4:30	5:00
	8:30	9:00	9:30	11:00	11:30	12:00	11:00	11:30	12:00	4:30	5:00	5:30
Pitch Raising/Wim Blees	●											
The Heart Of A Temperament/Michael Kimbell		●										
Hearing and Voicing/Dr. Yat-Lam Hong			●									
Re-Stringing in 30 Minutes/Sid Stone				●								
Computerized Piano Service Mgmt./Jim Coleman, Sr.					●							
Vertical Escapement/Bob Erlandson						●						
The Ins & Outs of Vertical Dampers/Mary Smith							●					
Why Knot?/Bruce Stevens								●				
Ivory Keytop Restoration/Steve Brady									●			
Shooting Trouble Dampers/Brian DeTar										●		
Bass Strings/Ari Isaac											●	
Accu-Tuner to the Max/Dean Reyburn												●

	Saturday					
	1:30	2:00	2:30	4:00	4:30	5:00
	2:00	2:30	3:00	4:30	5:00	5:30
New Keyboards/Joel & Priscilla Rappaport	●					
Stay Put/Christine Lovgren		●				
Shop Safety/Doug Neal			●			
This Can Feel and Sound Grand/Dick Bittinger				●		
Tuning The Top/Paul Monroe					●	
Pedal Systems/Steve Brady						●

There Are NO Mini-Technicals Scheduled for Sunday July 18

Be sure to see the technical institute planning guide on page 60 of this issue to organize and pre-plan your institute schedule.

Milwaukee '93 Convention Registration Form

Name

Phone

Nickname For Badge

Address

City/State/Province

Zip/Country

Are you visually impaired? ☐ Yes ☐ No

Are you a Guild Member? ☐ Yes ☐ No

Member #

Spouse's or Friend's Name

Spouse's or Friend's Nickname

Is he/she a PTG Auxiliary Member?

Quantity		By June 18	After June 18	Total	
_____	Guild Member*	$140	$160	_____	3550-100
_____	Non-Member	$220	$240	_____	3550-200
_____	Auxiliary Member	$60	$70	_____	3550-300
_____	Non-Auxiliary Spouse/Friend	$80	$90	_____	3550-400
_____	Tutoring	$65	$70	_____	3550-600
_____	Auxiliary Tour	$40	$40	_____	3630-000
_____	Banquet Ticket(s)**	$30	$30	_____	3590-000

Total Amount Due For Registration $

** All membership dues and fees must be paid in full before the convention begins*

*** Banquet Tickets are not included in the price of Convention Registration*

PLEASE CHARGE MY REGISTRATION TO:

☐ VISA ☐ MASTERCARD CARD EXPIRATION: _____

_____
card number

THREE WAYS TO REGISTER

BY PHONE:: Call 816-753-7747 Monday-Friday 8:30 am -5:00 pm CST
BY FAX: Call 816-531-0070 24-hours-a-day/7 days a week
BY MAIL: 3930 Washington, Kansas City, MO 64111-2963

OFFICE USE ONLY
ID _____
DATE _____
AMOUNT _____
CHECK # _____

Application for Convention Tuning & Technical Exams

If you are an Associate member who needs to take the Guild tuning exam to become a Registered Piano Technician, an excellent opportunity will be available during the Convention and Institute in Milwaukee this July.

The PTG Examinations and Test Standards Committee will conduct tuning and technical exams July 15-17. Before taking the exams you must have passed the Guild written exam. A reclassification form, verifying that the written exam has been passed, must be brought to the examiner at the time of the test. Written test scores are not required.

Only a limited number of exam slots are available, so be sure to apply early by completing this form and sending it to: Jack Stebbins, 46 Eames Avenue, Amherst, MA 01002-1868.

A $60 fee payable to "Piano Technicians Guild" is required for applicants for RPT status. There is no fee required for tuning exams for RPTs who are attempting to achieve CTE status, and are enclosing a CTE consent-to-serve form.

The deadline for applications and fee refunds is:
June 30, 1993

Name _____ Member # _____
Phone _____
Address/City/State/Zip _____

☐ **Written Exam Only** No Fee
(If you check here, you may not apply for other exams at this time)

☐ **Complete Tuning Exam—$60** $ _____
☐ **Complete Technical Exam—$60** $ _____
☐ **Partial Exam (s)**
(Available only if repeating a section for the first time within one year of previous attempt:)

☐ **Part 2 Tuning exam—$30** $ _____

☐ **Number of Technical Exam sections @ $20 each** $ _____

☐ **Total Fee Enclosed** $ _____
(Note: no fee required for tuning exam for RPTs enclosing a Consent-To-Serve Form)

☐ **I have passed Written Exam taken 7/89 or later**
(Required for Tuning and Technical Exams)

☐ **I will bring Reclassification Form**

_____
Signature *Date*

1993 Convention Offers Private Tutoring

Sign Up Early —Class Periods Available Are Limited

"Just Do It!" is more than a slogan for an athletic shoe company. It is a call to action, also an effective method to learn and perfect new skills.

This is the last in a series of articles about Private Tutoring which means:

- The 1993 PTG Technical Institute is just around the corner.
- I've done all I can to illustrate the many advantages of participating in Private Tutoring - now it's up to you.

Just Do It!

The learning process includes:

- Information gathering - reading, attending classes, listening to discussions, etc.
- Information Processing - Making sense of the information which has been gathered.
- Application - Putting skills into practice. *Doing!*

Application may be done through trial and error or under the watchful eye of an experienced tutor.

Accelerate your learning process through Private Tutoring.

Invest in yourself• Improve your skills• Make yourself more valuable to your customers• Get an edge on your competition• Improve your job security.

Select your topic• We'll provide the instructor.

CLASSES ARE LIMITED - SIGN-UP TODAY!

1 1/2 hours of Private Instruction -
$65.00 **Before June 18,1993**
$70.00 **After June 18,1993**

Contact: Fred A. Fornwalt RPT
1993 Tutoring Coordinator
1333 Logan Boulevard
Altoona, PA 16602
814-942-1489

name _____

address _____

city _____

state, zip _____

phone _____

number of sessions _____

topics _____

_____

_____

To Register For *One* or *All* of the Convention activities...Photocopy the appropriate forms on these pages, fill them out and send them to PTG Home Office...
FAX: 816-531-0070
3930 Washington, Kansas City, MO 64111-2963 • 816-753-7747

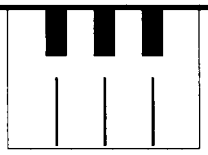
Letter to the Editor

A letter to the editor can easily sink to the bottom of anyone's "do-list," unless there's a powerful motivator to move it to the top. My motivation came this past week in conversations with Bob Johnson of Lubbock, Jack Wyatt of Dallas and the President's Message by Fern Henry in the April issue of the **PIANO TECHNICIANS JOURNAL.**

Those of us who are working to promote the SPELLS Program (Study of Piano Enhances Learning and Life's Success) continue to be appreciative of the significant role piano technicians are playing to make this endeavor successful throughout the country. Not only are technicians vital in encouraging retailers and teachers to initially get involved, they are also an integral part of the events and Speakers Bureau the SPELLS Program requires to effectively promote active piano participation to the community.

On behalf of the boards of the Piano Manufacturers Association International and the National Piano Foundation, I want to thank the leadership and the membership of PTG for embracing SPELLS - a market development program designed to reach the "unconverted" and place active music participation in a secure place in the "shelf space of the mind" of the consumer.

Brenda Dillon
National Facilitator for the SPELLS Program
Piano Manufacturers Association International



Technical Forum

A FEW GOOD TIPS ON TRAPWORK

JIM HARVEY • RPT • EDITOR

The survey that we all recently submitted has been compiled, and the results (as applies to our magazine) were made available to me. While I realize that numbers can be interpreted in different ways, the majority of you are quite happy with the *Journal*. For those findings I thank you (and our contributors, advertisers, home office staff, and especially Jami, who does the layout for the magazine). However, in looking through the *lowest* line item values, there was an indication of a desire for more "in-home" articles, or subjects dealing with our day-to-day activities. I not only concur with these findings, but had discussed this same need with various contributing editors and writers *prior* to the survey questions being written. Unless I'm way off track, I believe you've been seeing the results of this for the past few issues. As of this issue, even Nick Gravagne has finished sweeping the floor of his shop, following the longest rebuild in history, and is venturing off into a new area. Not only that, Nick somehow managed to get Richard Davenport to do — something — which is a task I've never been able to accomplish.

Taking The Easy Way Out

Take away rebuilding, action regulation and voicing, and sometimes tuning (depending on how bad the existing tuning is found to be), and there are two items that stand out in my mind as being *more* rewarding, as perceptions go, for the time and energy expended. The two items are *anything* dealing with the piano bench or the pedal/trapwork system, especially if *anything* is amiss with *either*. Actually, there is a third, which is case touchup and detailing. However, this is one of those subjects that's beyond my scope or concern. A piano may look as if it had fallen off a truck, or be covered in roofing felt, but if it sounds and plays okay, I'm a happy camper.

As with Susan Graham's "kit" for dealing with grand leg repairs, intensive bench repair deserves a separate article, consisting of what to carry in the way of supplies, parts, and tools. (Is there an Isaac Sadigursky in the audience?) However, I'm reminded of the time that I was let into the house by a relative (not the piano owner). I had tightened the bench bolts (for my own safety in this case), and had *not touched* the piano. I went back to the car for something I had forgotten. In the interim, the client showed up, saw the piano all put together (of course), and sat down on the newly tightened bench for a test drive. When I returned, the client was elated at how much better the piano sounded *and* how much better the action felt. It doesn't get much easier than this!

Notwithstanding the terse bench treatment, this month's column, in keeping with the idea of more mundane subject matter, is a composite of several items I have received dealing with trapwork. Since it is both one of the simplest and yet often perplexing, we'll start with an excellent review of the Steinway pedal "system" by Ken Sloane. Ken certainly has sufficient exposure to these systems, and has passed along some valuable tips, as well as drawings.

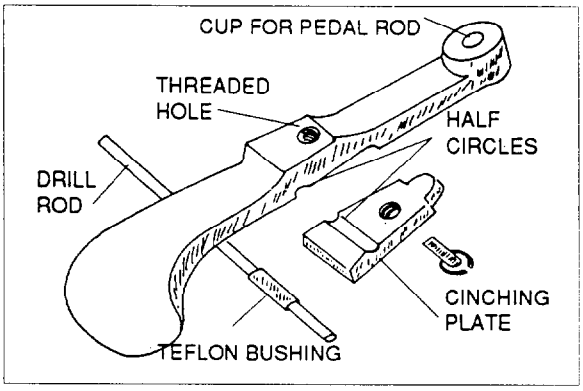
The Steinway Pedal Pivot

Did you ever have to service the pivot points for the pedals of a Steinway lyre because the pedals not only went up and down, but also side to side? If so, you probably had to remove a metal plate at the bottom of the lyre that served as a mounting point for the three pedals. Steinway appropriately refers to this fixture as the "pedal plate". (It is mounted to a portion of the lyre called the "pedal box") and has been used on Steinways for over 100 years, having been patented in 1885 and installed in pianos well before the turn of the century.

To remove the plate and the pedal mounting arrangement fastened to its hidden side, take out the screws that fasten the plate to the pedal box and remove the pedal rods from the cups at the pedal ends; the plate — with pedals attached — will then easily slide out of the pedal box. Once removed, I'm certain that most piano mechanics will find the design of the system quite functional but yet a model of simplicity. A 3/16 inch hardened drill rod held stationary by 4 flathead machine screws (easily removed) runs the length of the plate and crosses the three cut-outs for the pedals, providing a set pivot for each. A half-circle is built into the bottom of each pedal at about the midway point with a radius of slightly more than 3/32 of an inch. Mated to that is a half-circle of identical radius formed into a cinching plate that is held fast to the pedal with a machine screw passing through the plate and threaded into the pedal. The radius of these half circles is slightly greater than the radius of the pivot rod; and with a bushing of appropriate size and material, the pedal can be attached to the pivot rod so that it moves up and down freely but with no side to side (lateral) motion. I offer the diagrams for help in visualizing the above descriptions and the following suggestions for servicing the various parts.

If there is lateral motion in the pedal movement, sometimes just tightening the screw holding the cinch plate to the pedal will solve the problem. In fact, if

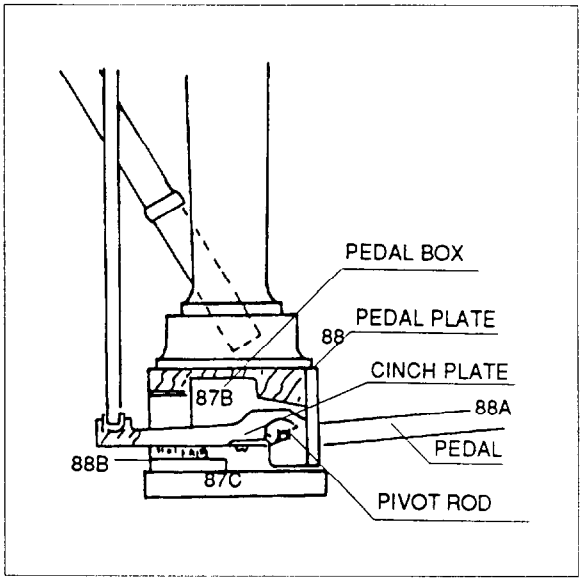
you are working with a new Steinway, or with one that has had the bushings in the lyre box recently replaced, it is a wise idea to tighten the cinch plate screws a few times during the first few years of use to compensate for initial compression of the bushings. Not doing this can lead to the problem described next.



If tightening the cinch plate screw does not eliminate lateral motion, the cinch plate screw must be removed and the bushing and bearing areas of the pivot point closely inspected. If the lateral motion has persisted long enough, the bushing material will probably have worn away at one or both ends, causing the scoring of a portion of the bearing area adjacent to the affected bushing end(s). If this has occurred, the bearing area affected (cinch plate, pedal, and/or pivot rod) must be replaced. Be careful when replacing pedals and cinch plates, however, that the half-circles in the parts are concentric when screwed together. I have received replacement parts where this condition does not exist and the bushing material is always squeezed too much in one area around the pivot rod and quickly deteriorates there, bringing us back to a pedal with lateral motion soon to be followed by scoring of one or more of the bearing surfaces.

In regard to the material found between the pivot rod and the half circles of the pedal and cinch plate, Steinway formerly used (in the pre-Teflon era) a very thick, dense, wool bushing cloth. The circular motion of the pedal is designed to occur on the side of the cloth next to the pivot rod, so they lubricated the cloth on that side with a very thick but slippery mixture of mutton tallow and graphite. Though this may sound rather gross to all the users of "new-age", very clean, "miracle" lubricants like McLube *and* Emralon, *it was a very effective arrangement. I have personally serviced many old Steinways with pedal boxes containing original parts and found the pedals "still goin' strong" with no lateral motion. I think the secret ingredient for success in cases like these was the careful assembly of perfectly mated and lubricated parts, followed up by the periodic tightening of cinch plate screws, **before** any appreciable lateral motion in the pedals crept into the system and marred bearing surfaces.*

In post-Teflon era pianos, a hollow, cylindrical, Teflon bushing is used on the pivot rod. I usually switch over to this bushing when renovating a pedal box with wool bushings because they are simple to install and require no lubricants. I follow these procedures during installation and have found the resulting pedal pivots to be virtually permanent fixes:



(1)Make sure the pivot rod under the bushing is straight, unmarked, clean, and polished.

(2)All the bearing surfaces should be free of any scoring or irregularities and mate together properly as described in preceding paragraphs.

(3)The bushing should fit on the pivot rod snugly. Too loose will cause the bushing to crimp when tightened between the half-circles of the pedal and cinch plate and eventually self-destruct (if you find a crimped Teflon bushing, you can sometimes get more service out of it by turning it 90 degrees on the pivot rod); and too tight can make the pedal rather hard to push down. If the bushing you install is too loose, try another, or try a new pivot rod. If it is too tight, likewise try another, or polish the pivot rod with compound on a buffing wheel, to ever-so-slightly reduce the diameter of the rod.

(4)Be sure to re-tighten the cinch plate screw as necessary during the first few years of use to compensate for the initial compression of the new bushing.

If you decide to use a wool bushing (and I especially recommend wool if you are temporarily installing a bushing on bearing surfaces that are slightly marred, because wool seems to "conform" to defective surfaces better than Teflon), follow the basic procedures as outlined above, but be sure to lubricate the side of the bushing next to the pivot rod with a thick lubricant-like tallow and graphite. One precaution however, don't do this last procedure on a white rug!

Ken Sloane, RPT
(Cleveland Chapter)

Tip On Steinway Pedals

While still on Steinway, the following letter fragment:

...I ran into another idea you might wish to pass on. I reconditioned a Steinway B recently. The rubber in the

bottom of the pedal end where the rod goes in was all shot. I got some 1/4" rubber tips at the hardware store. They fit over the rod just right, but also happen to be the same diameter as the hole. In an emergency, you can also use those red rubber erasers you buy at the office supply store. Cut the point off and you are in business. I notice a lot of grand rods with no protection on the ends; so they are just pounding themselves into the material on the bottom side of the lever; I just put a rubber tip on each end. Incidentally, the brass pintles (sp) Steinway uses to operate the sustain system can squeak when the pedal is pressed down hard. The tip slides just a bit when the angle is no longer 90 degrees; so a little VJ or equivalent takes care of that annoyance. You can also throw the pintle away and make a new one out of a hammer shank cut to proper length with the point of a center pin sticking out each end. No friction; no squeak or rubbing noise. Just make sure the pin is in the center on each end. It will seat itself in the leather or felt by making its own hole.

Dick Beaton, RPT
(Montana Chapter)

Either of the tips Dick describes are fine for getting through a tough situation. Practically any emergency repair done to correct a negative condition just prior to a performance is acceptable, providing (1) it works, and (2) it does not cause long-term irreversible problems. I suppose one could cut a chunk of their spare tire in a real pinch. In this instance, however, the word "reconditioned" was used. Instead of running to the hardware or office supply, I would prefer to *walk* to the phone, call Glorie at Steinway, and order a dozen of the rubber pedal inserts for a couple of dollars. I'd use three of them, and have nine spares for the next repair, whether for reconditioning *or* emergency. I don't know whether the tips from the hardware were crutch, chair, or conduit tips, but the important thing for us all to re-member is that there must be a solid, thick, rubber buffer area at the bottom of the tip, as well as some around the sides, to support both the pounding and oscillation as the rod goes through.

I think "pitman" is the word we're pursuing here. Again, in an emergency, run with the hammer shank. However, a hammer shank cannot be expected to have the same strength as an equivalent sized piece of brass, especially in this area of the piano. If replacing with wood, I would prefer to go with a larger diameter, such as the 3/8" dowel used in current production. Otherwise, if alignment is the only problem with the brass, I would consider modifying the brass in much the same way the hammer shank was modified. Aside: has anyone considered the Teflon tape used for pipe joints? Just a thought.

Totally Tubular Trap Levers

Changing gears to vertical pianos, another excerpt, this time from Jerry Foye. Since Jerry tends to call it the way it is, I've changed this tip ever so slightly to make it more generic.

...[Certain offshore] *consoles have metal tubular trap levers. I have encountered breakage where the upper part of the pivot bracket is welded to the tubular arm. The welds break and the pedal is no longer usable. A simple correction is as follows:*

1. Remove nut from pivot bolt and slide bolt out;
2. Remove tubular lever;
3. Align broken portion of bracket where broken at welds;
4. Using existing dimples as guides, drill two holes;
5. Install sheet metal screws;
6. Remount.

Drill with bit sizes: (range of) 3/32 to 1/8, or (preferred) #42. I use #6 x 1/2" long sheet metal screws with hex head. Drive in with 1/4 inch nut driver.

Gerald Foye, RPT
(San Diego Chapter)

Out of curiosity, I checked with the manufacturer on this matter. First, until my call, the service representative I spoke with was not aware, statistically (or singularly), that this is (or could be) a problem area. The lesson here is that someone must always be the first to report a situation — we cannot assume that manufacturers have been made aware of things from other sources. Next, so that I could check this out for myself, they sent me one of the trap levers that Jerry describes. Judging by the part provided, I don't feel that, from a design standpoint, the weld joint would present an immediate or future problem *unless* the related part, the support pedestal for the trap lever, were mounted incorrectly. This could cause the lever to "rack" and create undue strain on the welds. Finally, although Jerry's repair is sound and "field-worthy," the manufacturer (and I think most others) *wants to know* of any such incidents, whether a field repair is effected or a replacement part is provided. This type of thing is what warranties are for, and if a chronic

condition exists, most reputable manufacturers want to know (and have been known to provide assistance) whether the piano is still under warranty or not!

Dual Damper Lift Rods

Next, a tip snagged from the Central Flyer, the newsletter of the Central NC chapter.

Have you ever been frustrated in trying to get both damper lift rods in place at the same time on a console or studio piano that has one on one end of the action and the other at the other end? Try this: Place the action on its support bolts leaned slightly toward you so you can get your hand between the action and strings. Next, put the most inconvenient of the two rods in place. Then, press the appropriate pedal to hold this rod in place while you put the other one in. Finally, lean the action back into place as usual.

Stephen Duncan, RPT (Central NC Chapter)

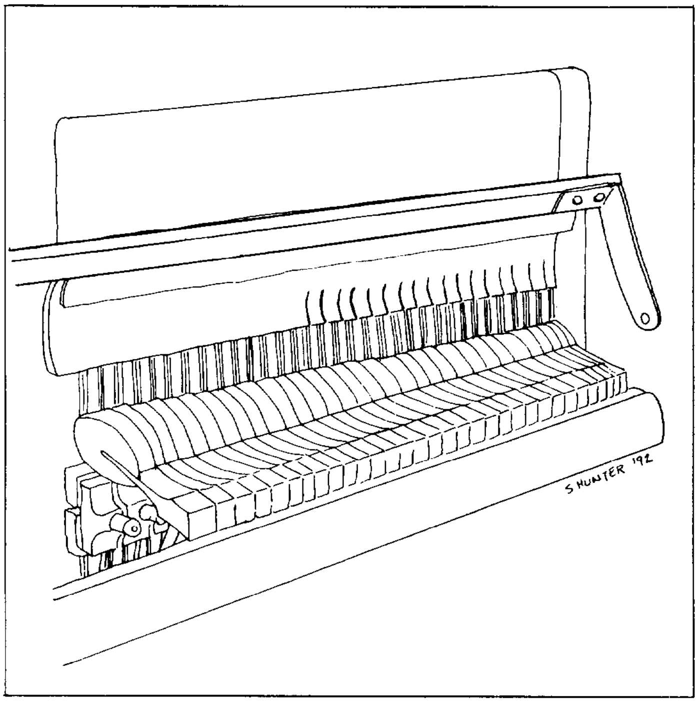
Muffler (Practice) Rail Problems

I did it again! I put a clipping in a "safe place" and can't find it. This one was also from the Central NC newsletter, but I don't know if member Sheila Hunter (who *did* do the super art work, which was sent to me separately by member Evelyn Smith) was the person who also came up with the "fix." I'll just have to re-create the story from memory (along with a few Harvey embellishments), and offer my apologies to my colleagues in the tar heel state.

Many vertical pianos come with a "muffler" or practice rail. Some are even connected by various linkages to the middle pedal. As you know, on grand pianos we spend time dinking around in getting the sostenuto tabs and blade timing properly regulated to both the keys and the pedal, only to have a misinformed piano owner (or a four to six-year old child satisfying their innate destructive tendencies) hear a crunching sound while trying to figure out how to work it, just prior to calling you to complain that it *doesn't* work. For the minority of piano owners who know how to properly use the middle pedal, it comes in handy for the twenty-seven compositions that were written that require this feature. So it's good that someone discovered a *real* use for this pedal.

Along with the benefits (especially for apartment dwellers) of the muffler rail comes associated problems, some of which are: getting it out of the way for tuning; *how* to get it out of the way for tuning; remembering to put it back *after* tuning; getting it calibrated correctly (not too low, not too high, not too close, not too far away) before *or* after tuning, and so on. Come to think of it, maybe the sostenuto isn't such a bad idea. After all, if you forget to put a sostenuto blade back, no one will know it for years!

None of this was what the newsletter clipping was about. Instead, the article mentioned that sometimes the muffler felt itself is quite stiff. As a result, especially in the high treble area, the felt will "play" several notes adjacent to the actual note being played. You can take the hard way out, and experiment with different felt (not as stiff), or, simply slit the existing felt into individual muffler strips for each hammer. As indicated in the drawing, it's only necessary for the offending notes. (Hint: for those who have attended my original tools class, you know to use your small plant pruners for nice, straight lines and easy felt cutting.)



I realize that this article could go on about as long as a listing of what causes "sticky keys". So, with a promise to print more of this *type* of information as it comes in, I'll close with a couple of tips from the time Ray Chandler and I teamed up and did a short-lived class on problems below the belt line.

Ray's (paraphrased): If, after reconditioning a pedal assembly with new materials *and* proper regulation, one of the pedals continues to "droop" below the line of the others, bend it! First, protect the floor or carpet underneath the pedal. Then, using an appropriate "tool", such as a stick or other as a lever, gently persuade the pedal currently in "parade rest" to align with those that are still at full attention. Needless to say, this is an upward motion between the floor and the front underneath surface of the pedal. The procedure usually applies to the damper pedal, which gets "mashed" down from years of (ab)use. [Note: if this procedure fails, you'll get even *more* experience with pedal system repairs, but fortunately, it usually does work.]

Mine (Kawai specific, but may be applicable to others): Some pianists object to the "hard" push on the UST series institutional pianos. This is due to the cumulative effects of the *two* springs used to control the damper pedal and the bass sustain (middle) pedal. Conversely, some people want even more resistance on their grand piano's damper pedal. The springs for the two different pianos are interchangeable, being the same dimensions, but of different compression (and resistance) characteristics. Simply switch them for low-hassle customizing.

Between You, Me & The Tuning Pin

On The WRONG Side Of A-440

Bill Ballard, RPT • Contributing Editor • New Hampshire Chapter

A-440. The one true pitch. We center our tunings on it almost as if we were called on to make one grand unison from the many thousands of pianos tuned each day. A-440 would seem as constant a law in our universe as gravity itself. It was adopted by the American Federation of Musicians in 1917 and the U.S. Bureau of Weights and Measures in 1920. You might even think that it was mandated by the Piano Technicians Guild's bylaws, as I had some tell me. Not exactly. The closest to such a codification was the resolution passed by the 1987 National Council, stating the Guild's adoption of A-440 as the single pitch standard and our intention to make it the standard for the rest of the world. This came from a panel discussion the previous year, chaired by Charlie Huether, on the confusing scattering of pitches, especially on the high side with the European symphonies (the Berlin Philharmonic at A-446 and the Vienna Symphony and others at A-444). It was bad enough to be jacking the pitch of concert grands from A-440 up to the requirements of each visiting orchestra. There was also a reactionary movement by singers Joan Southerland and Marylin Horne (and, of all people, the wife of political renegade Lyndon LaRouche) to roll the pitch back to something in the mid-30's. This so-called Verdi pitch was used in the Milan Opera House during that composer's era in the late 19th century.

Already I hear you muttering about the amount of music made on stale (or worse yet) badly decomposed tunings, and the number of times you discovered at the first tuning of the day that your fork got left in the other pants pocket. You can write that article. My subject this month is the A-440 standard. And it's not about whether A-440 equals C523.5, what may happen to the A-440 on the first partial of A4 when we put A440 on the second partial of A3, how often we should tune our fork or even whether we should plant it on the piano's body or in our teeth. These points may or may not need further discussion here, as the inaccuracies they could produce are small potatoes compared to the ruin put to our tunings by weather changes and the pianist's energy.

In this article, we'll explore just what A-440 means to the piano in terms of tension load, harmoniousness (my term for inharmonicity) and tone. We'll compare the piano's practical flexibility in pitch with that of the other musical instruments, which in playing with it depend on its pitch standard. After settling the issue of the need for a standard, we'll then take up the primary force bending pianos out of tune, the climate or hygroscopic factor. Here, I'll bring back one of the *Journal*'s best buried treasures, a study of the late Don Galt that tracked the hygroscopic motion of four notes on a piano against the concurrent relative humidity. Many parts of the country can show more climatic variation than Seattle, Washington, where Don did his work, but his figures make a unique record. That piano's tuning was not touched during the three-year duration of the study. Next month, it will get several "paper tunings", with some interesting results....

The Central Tone

Without giving it a second thought, there would seem to be a lot about the piano that depends on a standard pitch. We all know what happens when a piano slides down a half step to A#440. Bass strings go flabby, tone color turns brown, and the hammers find themselves rebounding off the likes of a wet noodle. All of this happens because of the direct relationship between pitch and string tension; either of these is the central figure in any scale calculation when speaking length and wire size don't change. Other things being equal, when one of these moves, the other follows. Or rather leaps ahead of, as when pitch (or technically, frequency) is the first value to be put into the formula. This is because tension's direct relationship to frequency is also exponential, that is, any change in frequency is squared in its effect on the tension. For instance, a 100 cents drop in pitch to A-415 is a 5.7% loss, but the resulting tension drop is 11%. Inharmonicity reacts similarly. In Young's formula, the coefficient of inharmonicity that applies itself to a selected partial of a given note is inversely proportional to tension. Thus the 11% tension drop yields a 12% increase in the coefficient. A little later we'll see what this does to the actual cents deviation from the mathematically pure, at the various partials. Hammer contact time or "Z", Dave Roberts' relative figure for how fast a displaced string will slingshot a hammer homeward, isn't nearly so sensitive. That's because Z changes as with the square root of the tension, in

this case a 2.9% drop. To engineers, these numbers are important. That's why every piano manufacturer's brochure on proper care of the instrument begins with the edict that the piano should be maintained in tune at A-440. In theory, piano scales are designed at it, and in practice, the character of the instrument is based on how the prototypes sound and behave at A-440.

We can all see the numbers change, but what are the real consequences for a piano that drifts off? Do pianos really fall apart unless centered at A-440? You'd agree that what's to be seen would be obvious at a semitone's distance, so let's look at the situation 100 cents down at A#440. (I'm not suggesting anyone test these effects a half step up, but you'll be interested in this historical note. The same Steinway scales we now maintain at A-440 were being tuned a hundred years ago at A458. (G#, by the way, is 466.1 Hz.) Steinway & Sons calculated, that before dropping their standard pitch from that high to A-438.6 in 1895, the total tension in the model D was 30 tons.

The first thing I might have worried about was what happened to the string load, both downbearing and on the frame. I have told my customers for years that engineers calculate the string load to be evenly distributed across the bridge, board and frame at A-440, and that when the pitch drops, the accompanying tension loss is not linear. As a result, I speculated that the evenness of the loading is upset. Regardless of the lowered total load, such a distortion of the load can't be good for those components. Not so! The 11% drop is even across the scale, and while the graphed curve of tension may shift downward, the only change in the curve's shape is due to the fact that the loss is proportional, not arithmetical.

How does that 12% increase in the inharmonicity of the piano effect the piano's tunability? Whether you're talking about a note's stretch number or the cents deviation of one of its partials from the mathematically pure, the increase is still 12%. The stretch number is usually defined as the cents deviation of the 4th partial minus that of the 2nd, and I'll spare you any math. However a spinet from the loony bin with a stretch number at F4 of 12 cents would still only see a change in that number, of 1.4 cents. The stretch number at F4 on a much nicer piano, a Steinway A, is 6.1 cents. If you think that a change in stretch number 0.73 cents might be imperceptible, consider that the difference in stretch numbers of these two pianos at A-440 is 5.9%. The increase of a Steinway A's inharmonicity from a 100 cents pitch drop barely covers 1/8 of that distance. Dr. Al Sanderson remarked that such an increase is small enough to easily be found from one note to the next in a single scale.

However, there is a real

impact on tunability that occurs as you use intervals involving partials higher up the ladder, such as the M3rd, M6th and m3rd. For example, on both pianos, the 6th partial that helps make the m3rd (and also complicates the 5th) will have its cents deviation increased, again, by 12%. But if you took the curve of the cents deviation at the 6th across the entire scale, its unevenness is a 35/12ths proportional exaggeration of the unevenness of the stretch number curve. Such an increase in the differences from note to note at A-440 has yet to be hit by the 12% due to semitone pitch drop. If you do anything with an m3rd, you'll be combining a curve of 5th partial deviations altered from the stretch number curve by 24/12ths (okay, 2) with that curve from the 6ths partial, altered at 35/12. Using this interval (or the 4th and M3rd as well), your difficulties in tuning that piano will be increased. With even your best tuning, the piano will still sound harsh. Luckily, you were doing the Steinway. Whichever piano you were doing, only 12% of your difficulties were caused by the low pitch. Make the low pitch an A-435, and the difference in harmoniousness would be negligible.

What about timbre? You can try this one yourself. Find three adjacent notes in the middle of a piano that are evenly matched for sustain and tone. Tune the lower note up 100 cents for a unison with the middle and tune the upper down to join them. On a Steinway M, a half-step up on the lower note doesn't make a noticeable change, and the upper note's qualities have been slightly attenuated. Now try this on a spinet.

On balance, we may conclude that while we would notice the difference in tone and possibly harmony of an A-415 pitch level, the piano certainly doesn't complain. But what if the pitch change is a narrower +/-1 Hz? Who would hear it, with no other reference around? Each of us has our favorite story of a musician who swore to having an internalized A-440, but who when handed a fork at A-441, said, "Yes, that's the pitch." I've heard

it from the top end of the concert business that no one can detect that small a step in pitch level. My own experience with musicians is that they're much more sensitive to regulation and voicing than to specific pitch. More to the point, if you took two matched grand pianos in a teaching studio which were in tune, well-regulated and voiced, and cooked them with the baseboard heaters until the pitch of both has dropped to A-435, there would be more than the sagged tuning to correct. In the action, the wood and felt moisture contents would have a similar drop. Both pianos now have the tonal characteristics of their scales altered to that minor degree described above. But both now also have fattened let-offs, wilted action friction with repetition springs overcoming backcheck grip, keyframes knocking, fasteners loosened, and hammer felts that are much drier and harder. Take one piano, and return one to its earlier tuning at A-440, but do nothing about all the annoyances in its feel and tone. Tune the second piano at the low A-435 and give the regulation and voicing what they need to regain their earlier condition. (This will easily take ten times longer than the other piano's pitch raise, even with those wonderful variable-friction hammer shanks.) Most of the pianists I know, if presented these two pianos in such a way that short-term memory wouldn't make the pitch differences unavoidable, would spend only a few minutes on the piano whose only repair had been to the pitch, and would spend an hour enjoying the second pianos' repaired regulation and voicing before ever stopping to ask where its pitch was.

You don't have to agree with this speculation of mine. There's also the eternal issue of whether absolute or pure pitch really exists outside the mind of its possessor. With a pitch deviation this narrow, there is less of a relationship between what human beings can hear and what machines can read. However, regardless whether a +/-1 Hz swing in pitch will be reliably noticed with no more than human memory as a reference, it's an easy matter for us piano tuners to nail all of our work at the A-440 standard, and with great accuracy. This is fortunate because other musical instruments are not nearly so flexible. Stringed instruments do fine, structurally, in the range from 435-445, but because their tone comes from a sort of "brinkmanship" with the maximum string load (as one violin maker told me), they must have stability. A violinist signing on with an orchestra pitched at A-446 may restring with a lighter set of wires to avoid some strain for the instrument, but tuning back down to A-440 for a mid-week get-together with other friends would seriously unsettle it. Changes in timbre and action under the fingers are quite clear, but because intonation is literally in the players' hands, it's unaffected. Singers are also in good shape. They're bothered mainly when pitch moves a semitone, possibly pushing the highest or lowest note of a particular piece already learned at A-440, off their range.

Wind instruments however, are in a pickle, as the wavelengths are set by the length of tubes in the brass, and the location of tone holes in the bodies of the woodwinds. In general, +/-15 cents is the limit available by the positioning of mouthpieces and slides, but well before that (usually +/-5 cents) the embrochure can no longer easily correct for the warping of intonation (or "scale", as band instrument technicians call it). The main factor in how quickly a scale (intonation, remember) tuned to A-440 will warp when pulled from that pitch, is the ratio between the length and shape of the body's bore, the diameter of the hole, and its depth (in the case of an oboe, the thickness of its body, and in a flute, the height of the attached rim). Flutes and saxophones are in good shape for maintaining intonation as pitch strays. The former always seems to have reasonable intonation close by for the embrochure, and the latter are not much better on pitch as off.

There's a good reason, however, that all the instruments look to the oboe for pitch. With an octave whole the size of a needle, it has no leeway. Don't assume though that because the Berlin Philharmonic has its crew at A-446, your neighborhood oboe or clarinet can easily make it anywhere in between. A clarinetist may carry an extra-long barrel, but while that can put him in the ballpark, he then faces serious intonation problems. Enough so, that to allow them to remain and sap precious concentration during a performance would be a breach of professionalism. At the highest levels of performance, wind players gladly invest many hundreds of dollars in enlarging or shrinking tone holes, and think nothing of having an instrument specially made for a non-standard pitch. (I did hear of one U.S. orchestra on its way back down to A-440, and currently at 441: the entire percussion section is stranded for the time being at A-442. I also heard of a technician servicing an orchestra pitched at A-442, who would let the pitch wander between 442 and 440. When it touched 440, then he would hitch it back at 442. I don't believe this for a minute. One with experience told me, "You can't fool a good instrumentalist, especially when that instrument becomes part of their body." Nor can you fool a high quality quartz tuner.)

Such are the problems of other instruments when asked to tune at other than A-440, in contrast to the piano that doesn't seem to care much where it's put. The great unwashed masses of amateur musicians certainly wouldn't let a one or two Hz difference between themselves and the piano spoil a hot jam session. But professional pianists are happy when they (as hosts) can provided their colleagues with a consistent pitch standard, the A-440 you've been keeping their piano at. Recording studios are even fussier, because in post production editing, they don't want to find that the two sections to be joined involve a piano with a wandering pitch. Usually the studios acoustical isolation also means climatic stability. High-budget recording situations don't mess around: the cost of having the technician on hand for the entire session is negligible compared to the cost in the entire production's down-time when you have to chase him (or a replacement) down. Professional music requires a pitch standard. It's simple for us to provide it. So why not.

The Winds of Change

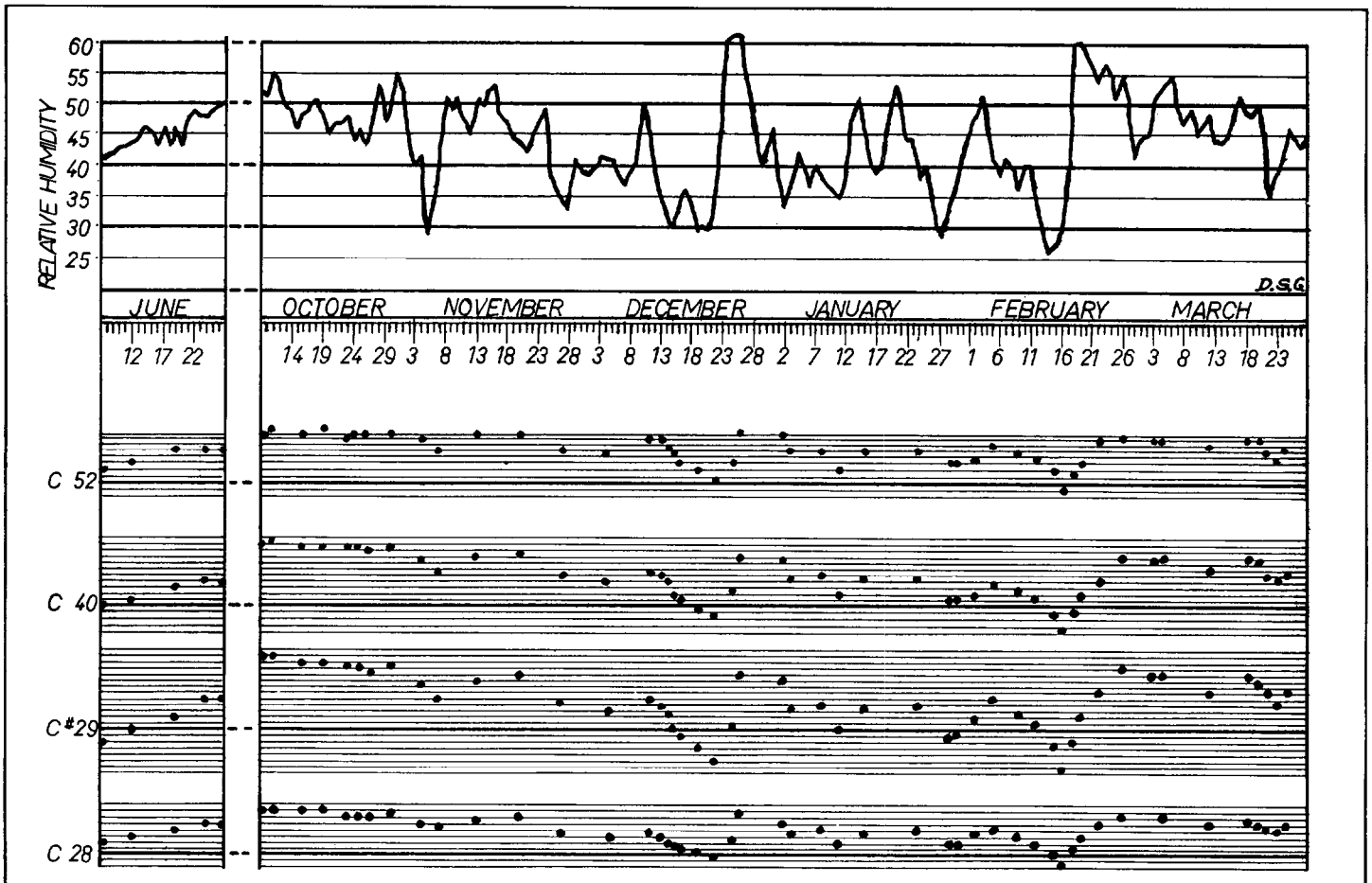
With all this music depending on a standard, we technicians need A-440. We need to know where to put pitch on our first visit, and where to return it when it strays. The conventional wisdom is that pitch and soundboard moisture content travel together, rising in the summer and falling slightly more in the winter. The net effect, if you let a piano go untuned over the years, is a downward slide. How does this work? Generalized creep is the standard answer, but it may be a case of, as Bob Elliot puts it, being true more in general than specifically. Certainly the speaking lengths aren't shortening. The string load can exert an outward pressure on the rim or case, through the soundboard's crown, and it only takes a .001" inch expansion at the rim to make a crown disappear. However, that's hardly the 6% change in speaking length needed to produce a 100% pitch drop. Might there be a continual process of elongation in the wire to account for this? Wire stretch has a half life which after three or four years in negligible. So until the real explanation comes along, I'll just figure that if I were a piano with a 20 ton load strapped to my back, and if nobody paid me any attention for ten years, I'd help myself to any maneuver that could lighten that load.

However, you'd like to know about the drift in tuning over a six to twelve month interval because that's your business. Not wishing to oversimplify, but rather to provide a premise, I'll say that a piano's tuning changes when the weather does, when we put our tuning hammer on it, and when the pianist beats on it. For the remainder of this month, I'll talk about the weather. Next month we'll see how much gets changed during a tuning. As for the change under use, I'll pass.

Who remembers the study done by the late Don Galt, this magazine's editor until 9/78, on the way four notes on a console piano moved in relation to the ambient relative humidity? Originally published in 10/75, it reappeared, abridged, in 7/79, and is still available as a reprint from Dampp-Chaser Electronics. The resulting chart (**above**) is unforgettable. As Don described it, "a 45" studio upright piano of good quality was kept — for nearly three years — in a studio in the music building at the University of Washington. During this time it was neither played nor tuned. The piano simply sat there, responding naturally to the ambient atmospheric conditions. A recording hygrometer placed on top of the piano made a continuous record of the relative humidity. Periodic pitch readings were made on all of the C's and of C#29 (the first note above the bass break on this instrument)...with a Strobo-Conn."

The chart, a seven-month, four-note edition of study, is the best (and to my knowledge) the only long-term tracking of hygroscopic motion in a piano's tuning. There are several points of interest. Regardless of how the notes seem to go their own separate way, they do all manage to swing back within 1 cent of each other on 6/24, 2/19, 3/12, and 3/23, and within 2 cents on 12/24 and 1/2. In fact, the consensus on 6/24 was possible because C#29 moved nearly double what the other notes did since the start on 6/7. The time lag between relative humidity and pitches is fascinating. An example is the contrary motion between them on 2/17. If you look at the notorious bass break, you'll see the biggest discrepancies between C28 and C#29 (those on 12/26, 1/29, and 2/16-24) occur on a swing backwards from an abrupt change in relative humidity. The whiplash on C#29 might remind you of the binding of key balance holes which (the experts tell us) is always worse while the keyboard's equilibrium moisture content is catching up with a relative humidity on the move.

Of course, Seattle, Washington is one of those parts of the country whose outdoor climate doesn't have wide swings between summer and winter. The Oxford World Atlas shows the Pacific Northwest and the Gulf coast both having a 20 degree differential between average summer and winter temperatures, and with constant precipitation. The western



RELATIVE HUMIDITY AND PIANO PITCH

Correlation between the pitch of representative notes of a piano and the ambient relative humidity as recorded at the University of Washington.

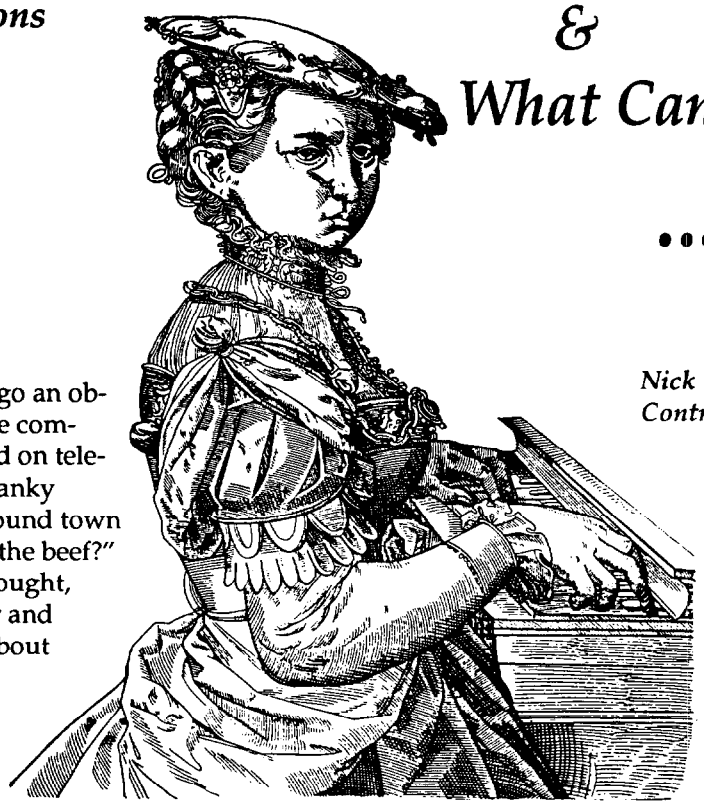
desert states show a 40 degree temperature differential, however with no ambient humidity to effect the tuning on pianos. The area east of the Mississippi combines the 30-40 degree temperature differentials with a constant supply of humidity, and is another story. These are seasonal average temperatures, by the way. The maple-lined boulevards of beautiful Putney, Vermont, go from the high 90's in the summer down to as much as -30 degrees in a record-setting winter. These are also outdoor climates. Whenever the temperature inside a human habitat drops below 50 degrees, the central heating goes on. If a piano in this location has had a long warm season to soak up the generous ambient humidity, its moisture content will begin a long dive, and the pitch of the piano will follow right behind. For those of us east of the Mississippi and north of the kudzu, this seasonal swing is not only a fact of life, it's bigger than an 800 pound gorilla.

I'll leave you now to contemplate the meaning of the curves in Don Galt's chart. Next month, we'll tune that piano. I'd also like to acknowledge the many people (among them, Dr. Sanderson) whose expertise has allowed the article to be fleshed out with beef instead of baloney. You didn't think *I* knew all this stuff, did you? As always, send any comments and question to me, c/o Jim Harvey.

Note: The chart on page 36 is reprinted from the October 1975 Issue of the Piano Technicians Journal where it originally appeared in an article by then Technical Editor, Don Galt, RPT.

Good Vibrations

The "I Hate My Piano & What Can I Do About It?..." ...Series



Nick Gravagne, RPT
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With A Little Help From
Richard Davenport

Some years ago an obnoxious little commercial aired on television featuring a cranky old lady running around town hollering, "Where's the beef?" Hamburgers, she thought, were getting thinner and thinner and it was about time that someone began making a stink about it. She succeeded, I thought, since every time this ad appeared on my TV I left the room. And now, by way of a not too subtle segue, the question might be asked by piano owners and tuners, "Where's the tone, the fundamental?" Indeed, where is it? In my experience, and that of many of my colleagues, most pianos (even a few new ones) sound awful and perform poorly.

Several times a year I receive a phone call from disturbed pianists. They relate to me what I call "the piano owner's lament." It goes like this: "Nick, I'm sorry to say this but *I hate my piano.* It used to have such a rich and satisfying tone, now I almost can't bear to sit down and play it. What's wrong, and is there anything you can do?" I begin asking pointed questions so as to narrow down the range of possibilities. But piano tone, like the old lady's hamburgers, has a tendency to go from rich and juicy to thin and dry. In order to make things right again the instrument may have to be totally restored right down to the soundboard, or only partially restored, or simply tuned and voiced, depending upon conditions and expectations.

What are these conditions and expectations? When do we rebuild, or restring only, or tune/voice only, or combine these aspects? This next series of articles will deal with these and many other related questions.

We will start, however, by considering the simplest condition of a piano that has slid from grace into a lower state of performance. Such an instrument needs no replacement of parts, it simply needs to have all its existing equipment put right again, or as right as possible considering use and wear. Now this, too, implies a wide range of possibilities, so we will be specific and assume the following:

a. that the piano is 5-8 years old, and of good quality;
b. that any repairs have been made (e.g. wobbly pedals);
c. that the project will last from one to two days;
d. that the instrument belongs to someone who can appreciate the fine work about to be done;
e. that the idea is to bring the piano up to a performance level;
f. that all necessary work will be performed (and for the sake of this article money is not a problem).

In future articles these assumptions will be modified to include a wider range of real-life pianos and circumstances.

In order to compare notes for preparing this article I have enlisted the help of a Mr. Richard Davenport (a.k.a. "Mr. Personality" according to his own office memo sheets). Richard hails from southern California and plies his craft mostly in the Hollywood area where he "tunes for the stars." He also tunes for Twentieth

Century Fox and is no stranger to high-level tuning and voicing. Through his various manufacturer and store connections he has done a considerable amount of work on Steinways, Yamahas, and Bosendorfers. We welcome his non-glitzy input on this subject.

So the scenario is this. The Piano Owner's Lament has been recited over the phone. The ensuing conversation has convinced you that the instrument needs some long overdue tender loving care (TLC) by way of minor repairs, a good cleaning, some regulation, a solid tuning and voicing. But none of this is certain. So an appointment is made to tune and clean the piano, tighten the plate bolts, and make an on-the-spot evaluation followed by a consultation with the piano owner, Mrs. Emma Schwartz, a piano teacher of good repute. The actual meeting of Mrs. Schwartz and her piano confirms that the suspected condition of the instrument is, in fact, real. After cleaning and tuning the piano, and after two cups of coffee supplied by Mrs. Schwartz (who now insists on being called Emma) you explain many of your findings along with what you intend to do about them. You inform her that the job will likely take sixteen hours. Money is discussed, she agrees, and an appointment is made for you to apply your TLC on her piano.

But what do we technicians look for? And how do we know we can deliver? In my correspondence with Richard, he writes, "The more I'm forced to organize my thoughts, the more obvious it becomes that correct evaluation is the key to the whole job." Quite so. From a practical standpoint it is very helpful that the technician quickly discover the piano owner's *main* complaint, and begin focusing the entire job around solving that problem. In my experience the main complaint, that which prompted the *lament*, is that the tone is suffering. It has thinned out or become pingy. But for the moment we are assuming that time and money are not a problem; all that matters is that the instrument be brought up to performance standards. So we must start by talking ideally. Later on in this series we will temper these fragrant ideals with the real life and often musty smells of iron, wood, felt, people and money.

So let's get back to our hypothetical and typical piano that needs to be "brought up." How do we go about *evaluating* Emma's piano, or any piano? What *strategy* will we use in approaching the job? And what *techniques* do we actually use in accomplishing the work?

What follows is part of an outline submitted by Richard. Below the outline many of the individual items are elaborated on by me. For the moment we are only talking about appraising the condition of the instrument. This is the *evaluation* stage.

I. At the piano
  A. Appraise tone
    1. Evaluate tone
      a. Attack/decay; balance
      b. Hammer condition
      c. Strings — seated and level? Bearing?
      d. Condition of soundboard; Crown?
      e. Condition of bridges/notching; pins
      f. Agraffes/capo bar
    2. Evaluate action regulation, dampers, pedals
    3. Discuss with customer
      a. Tone
      b. Touch
      c. Limitations of instrument (based on A1.)

Tone

When evaluating the piano for general performance the very first thing to do is *play the piano* while your customer is present. Even if you can't really play, knock out some chords, or run some scales. You are a piano technician and your customer expects you to play and listen to the instrument. Pay particular attention to the tone in the first capo bar section of the scale, which some of us refer to as the melody part of the instrument. Pianists are obsessed with this area of the scale, since much of their melodic work or powerful strokes that must project, are played there. So now is the time to zero in on the tone. Play a firm stroke and listen for three things:

sustain, decay and fundamental. Tonally, these are the most important tests you will make.

Sustain is mostly a quantitative assessment: how long does the sound hang on? In fact, some technicians refer to this component of tone as "hang time." As a rule of thumb the notes in this first capo area, say note #65, should sustain for 10 seconds or more, with the first 5 seconds being most audible while the last 5 seconds may be more subdued, but hanging on.

Try this test two ways. First, strike the string with the hammer, then pluck the string with your fingernail, or guitar pick, or whatever. Give the string a good firm pluck and listen. If the sound dies off too quickly, say completely gone in 5 to 6 seconds, the piano will never have the "singing quality" so necessary for fine piano tone, and no amount of work with the hammers will rectify the problem. Short hang time trouble can usually be traced to a really bad soundboard or radically bad downbearing conditions. Case in point: I know of a concert piano with a full two degrees of bearing, .036", in the capo area and *in the strung* condition. The sustain is bad, and the piano is said not to sing in spite of heroic and finally desperate efforts to work the hammers.

There is another aspect of sustain which is critical to fine piano tone. That is the ability of the string/soundboard to not only "hang on" for several seconds, but to hang on loudly, with intensity, for as much of the hang time as possible. This we call the **decay** component of the tone. A long and vibrant decay characterizes the singing piano. To the pianist, such notes "play themselves," effortlessly.

If this quality of tone is missing, especially in the treble areas, the pianist will hate the piano. Typically they will call it dull, lifeless, and having "no tone." Coaxing that much-wanted soaring sustain and vibrant decay from the instrument is primarily a hammer voicing consideration, and will be dealt with in a future article.

Listening for **fundamental** is a bit trickier than listening for sustain since this assessment requires a more qualitative approach. Not *how long* does it sound, but *how* does it sound? In the routine of everyday tuning most of us hear pianos so lacking in strong fundamental tones that we have almost lost the ability to recognize a strong fundamental. A weak fundamental is often the result of grooved and hard hammers. One trick that helps in focusing on the fundamental is to pluck the string with the fleshy side of your finger. Clearance is a bit of a problem but you can manage.

Note that the tone will be dull, lacking in strong overtones. But that is what we want. What you are hearing is more fundamental than anything. Now play the note with the hammer. Does it sound anything like the sound of the fundamental, or is the fundamental buried in a garbage heap of tinkling overtones? Now pluck the same string with your fingernail.

Overtones will predominate while the fundamental seems idle. Play the note with the hammer again and decide whether the struck string sounds more like when you plucked it with the side of your finger, or when you plucked it with your fingernail. What is the balance, the mix. On many pianos that need voicing, the fundamental is weak due to hard and/or grooved hammers. Incidentally, these plucking and striking tests make excellent demonstrations for your customer.

Hammer Condition

Checking the hammers will reveal one of two things: that the hammers are original, grooved and packed in; or that they have been replaced "recently" but either not properly voiced, or quite improperly voiced (usually hardened to simulate maple hammers for that really crisp jazzy attack).

Obviously, if the hammers are severely grooved and misshapen they need to be replaced. But if there is still enough "meat" in them, as would be the case with Emma's piano, then shaping and voicing is the answer.

Strings

Are they seated and level? Maybe they were at one time, but they will need re-seating and re-leveling. Just count on it.

Downbearing

Bearing is best measured with either a bubble gauge or dial indicator. It helps to have numbers to associate with the readings. For one thing, on an industry wide basis the numbers will begin to have specific meaning for all of us. But using a rocker gauge is at least better than nothing. Net positive bearing readings might read something like .008 inch to .012 inch, which relates to about a one-half degree angle of downbearing in the strung piano. This is a very healthy reading, but please note that *any* net positive reading found everywhere on the bridges is a good sign. Much of the time, however, the bearing appears to be flat; no perceptible angle of bearing. This is not the best sign, but is doesn't mean all is lost either as long as the sustain tests were reasonably OK.

In my experience a flat reading bearing frustrates our efforts in pulling the best possible tone from the piano. Specifically, although the sustain may be fairly long, the broad attack and fat swell and decay components of the tone are diminished. Additionally, small and subtle "ghost" beats seem to be more apparent than where bearing is positive. Nonetheless, a noticeable tonal improvement can be made even in instruments having less than wonderful bearing. But the customer should know what to expect.

Soundboard And Crown

Beyond looking for cracks and serious structural failure of the board, an accurate assessment of the soundboard in the strung piano is difficult if not impossible. The usual and inconvenient test for crown involves crawling under the piano and stretching a string across the soundboard grain, and between the

ribs, in order to determine if an upward curvature exists. This sort of test is generally reserved for instruments being seriously considered for total rebuilding. As shown above, listening to the tone will tell you most of what you need to know. If the sustain/decay is obviously short, and/or the sound emanating from the piano is weak whether the string is struck or plucked, and downbearing isn't radically outside of usual parameters, then the soundboard is almost certainly the culprit. It is a waste of time and money and reputation to try to bring up such a piano.

Bridges And Notching

Even with a good board and positive bearing, the tone will suffer badly if the bridges are defective. Loose bridge pins are a common hazard in all pianos, young and old, but cracked and split caps are usually found in old pianos. If clean unisons cannot be tuned, a really nice, focused tone will never be had. Therefore, false beats, the really bad and obvious kind, should be one of the first things to look for when evaluating tone. The falseness may be in the string itself, but wholesale falseness can usually be traced to loose bridge pins or an imprecise termination point at the front notch, especially critical in the upper treble sections. As mentioned earlier, flat downbearing seems to encourage a more subtle kind of falseness.

A test for loose pins that works most of the time, and does not require having to pull the pin out of the hole, involves pressing the pin down on the bridge and firmly in the direction of the string while playing the note. If the beats slow down or stop, the pin is too loose. The pushing tool can be a screwdriver or other metal tool in your kit. Be careful not to slip and mar the bridge top. If falseness is bad enough that it stands in the way of you making confident promises to your customer, then the issue should be settled now, at the time of evaluation. You might try loosening a string and tapping the bridge pin deeper into the bridge (go easy or you could bury the pin). Hook up the string and see if an improvement has been made. Or try pulling the pin and reinserting with a five minute epoxy. Do other work while the epoxy is drying, or talk to your customer. When dry, try the string again.

Agraffes And Capo Bar

When agraffes are bad they are really bad. The tone sounds as if small pieces of tin foil are wrapped on the strings. Less bad agraffes might cause only a tiny hint of this sizzle, and can be left alone until or whenever the piano is totally rebuilt. If capo bar sizzling is suspected in a few places, loosen the string and shift it a bit along the bar to a place "out of the groove."

Recap

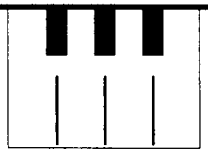
Emma Schwartz and her grand piano fit the assumptions outlined earlier of a better than average player and a better than average piano. For several years her piano, which has been kept in a reasonably stable environment, has been tuned twice a year, with an occasional minor repair here and there made for a "sticking key" or squeaky pedal. But the instrument has slowly declined in tone and touch to where it is no longer bearable to play. Emma is worried and depressed.

Richard Davenport writes that typically such an instrument's tone has a bright attack, weak fundamental, and short decay. Reasons: the piano is out of tune; hammers are too hard and have noticeable string cuts; string spacing needs correcting; strings need seating and leveling; and the action and plate screws are loose.

The action shows little or no aftertouch, especially in the center of the keyboard; regulation not bad but uneven; dampers knocking against the stop rail; dip too shallow; knuckles squeaking; knocking keyframe; lost motion in pedals; sostenuto not catching all the dampers; squeaky shift; sustain pedal lifts dampers too high; damper lift uneven.

What processes and techniques do we use to bring such an instrument back? And once back, how do we keep it there?

Continued next time.



Guest Feature

Measuring Inharmonicity Using Continuous Excitation

Robert Scott
President of Real-Time Specialties
Ypsilanti, Michigan

Background

Inharmonicity, as applied to strings on a piano, has been defined as the amount of deviation or offset of the partials as compared to the exact whole-number multiples of the fundamental. For the purposes of this article, we will say that a certain partial has an inharmonicity of "x" cents if the frequency of that partial is offset "x" cents from the appropriate multiple of the fundamental, where one cent is a deviation of 0.05946%. For example, if the note A4 has a fundamental frequency of 440.000 Hz, and a second partial frequency of 880.616 Hz, then the second partial has an inharmonicity of:

1.18 cents = (999-.616-880) / 880/0.0005946

Inharmonicity has applications in the design of electronic tuning devices and in the design of piano scales. We will endeavor to develop a state-of-the-art method for measuring inharmonicity.

Current Methods

All methods of measuring inharmonicity reduce to the precise measurement of the fundamental and partial frequencies. The usual method of doing this is to strike the note and analyze the sound produced. The sound may be detected with a microphone, but it is still a mixture of all the partials. To measure the frequency of a single partial, the signal is processed through a narrow band-pass filter. This is an electronic circuit that suppresses all frequencies except those in a narrow region around the desired frequency. The resulting filtered signal contains only the desired partial, together with very low levels of the other partials. (The fundamental is thought of as the first partial) The frequency of the selected partial may then be measured.

There are many ways for measuring the frequency of the filtered audio signal. A direct method would be to connect the filtered signal to the input of an electronic frequency counter. A great deal of care has to be taken in setting hysteresis thresholds in order to get a reliable and countable signal. Even with such precautions, the direct counting method can only measure to +/- 1 cycle over the counting period, which is not very good resolution.

A modest improvement in this method would be to use a phase-locked loop to generate a high-frequency multiple of the frequency being measured. While this improves resolution, it suffers from settling time problems and cannot guarantee continuous lock on a signal that is beating.

The most accurate devices rely on a precisely controlled reference frequency (usually controlled by a quartz crystal oscillator). The phase difference between the reference frequency and the audio signal being measured is displayed in a visual pattern (a row or a circle of discrete indicator lights, or a strobed pattern on a rotating disc). The rate of movement of the visual pattern indicates the difference between the reference frequency and the audio signal. In tuning the piano, the note on the piano is tuned in order to achieve a nearly stationary visual pattern. But when using such a device to measure frequency, the reference frequency is varied instead of tuning the piano string. If the reference frequency generator in the device is calibrated, its frequency in Hertz (or offset in cents) may be read out directly.

Although this method is the best so far, it still has some problems. One is that the partial that is being measured may not be very prominent in the total audio signal when the note is struck by the hammer. The harmonic content of a struck note is highly dependent on the position and the voicing of the hammer. A hammer with a worn flat striking area will produce less harmonic energy than a sharper and stiffer hammer. Of course, if the particular partial is not very prominent, one could argue that the inharmonicity of such a partial is not very relevant to either

piano tuning or scale design. But for academic completeness, it would be good to know about that partial anyway. It is a quality of the string whether the particular hammer makes it sound or not.

Another problem is the decay time of struck notes. As the note decays, the strength of the signal diminishes to a point where its phase becomes ill-defined. When viewing the phase comparison on the visual display of a tuning device, the pattern becomes confused and random. One must determine the rate of phase drift before the note dies out. Striking the note again always starts the visual pattern out in a random position, so repeated observations cannot be combined. If the note is struck too hard, the frequency at the beginning of the decay will be noticeably higher than the frequency near the end of the decay, so there is a limit to how much the note may be prolonged. Also striking the note hard with a hammer can resettle the tuning into a slightly different pitch, thus making the comparison of different partials invalid. Of course, good pin setting practices minimize this effect, but it still must be considered.

Finally, there is the problem of false beats. False beats are present to some degree in all piano strings. In the worst cases, the false beats make it impossible to say which direction the phase on the visual display is drifting, because it appears to be drifting both ways at once. The visual pattern showing the phase comparison will be very confusing. For example, there may be a portion of the pattern that is supposed to gradually move to the right or left. When false beats are very bad, the block of indicators may just vanish, only to be replaced by two distinct patterns on either side of the vanished portion. It is impossible in this case to say if the vanished portion of the pattern has moved to the right or to the left.

Even if false beats are not this bad, they can create an almost imperceptible irregularity in the phase drift. With such irregularities, the measured rate of phase drift will depend on exactly when the measurement was made, resulting in an ambiguous measurement.

The New Method

The method we are going to consider is not based on striking the string. Instead, the string is excited by a continuous signal and the amplitude of its response is measured. The excitation is magnetic, and the response is measured optically.

Measuring Response

To measure the response of a string to some kind of external excitation, several methods were considered. One was acoustic. A microphone could be positioned just above the soundboard, and the amplitude of the sound could be measured. This method was discarded because of the interference from extraneous noise and the fact that the measurement would be affected somewhat by other strings in the piano. Also it is difficult to get good microphone response to extremely low notes. Another method, which was actually tried, is magnetic. A pickup similar to the ones used in electric guitars was placed near the string. This method suffered because of the interference from our excitation, which was also magnetic.

Finally, we settled on an optical method. An infrared LED (light emitting diode) and an infrared photo detector are placed on both sides of a string, as shown in **figure 1** (page 44). The LED and photo detector are partially masked to reduce the width of the beam from the LED to the photo detector. The combination of the two devices is positioned so that the string blocks off about one-half of the narrowed beam of light. Now if the string vibrates up and down, the amount of light detected will vary accordingly. The signal from the photodetector is AC-coupled with a cutoff frequency below 20 Hz, and then rectified to indicate the amplitude of the varying portion of the signal. It is this amplitude signal that we use to indicate the amount of response of the string.

Magnetic Excitation

The string is excited by positioning a coil of about 200 turns of

wire wound on a thin steel core just over the string, as shown in **figure 2**. Most of the coil is covered with magnetic shielding foil, except for the end that points at the string. The coil is then driven by a square wave with a precisely controlled frequency. (A square wave was chosen for simplicity, even though a sine wave would have been more appropriate).

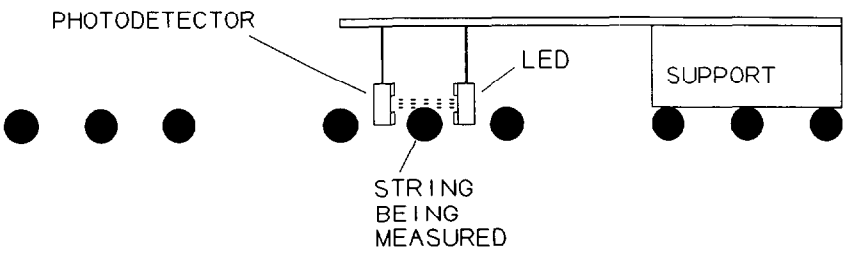


FIGURE 1: THE OPTICAL PICKUP

The light beam between the LED and the PHOTODETECTOR is half-blocked by the string.

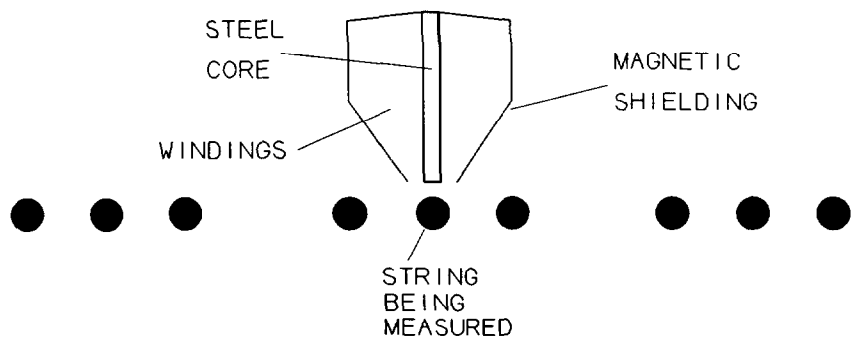


FIGURE 2: THE MAGNETIC EXCITER

The string is excited into up and down motion.

The frequency of the square wave is controlled by a microprocessor. A special method of continually varied periods is used to achieve a resolution of 0.000006% of the generated frequency (which is 0.01 cents). The variation in periods does create a phase jitter of 0.5 microseconds, but this does not seem to have any effect on the response of piano strings to the magnetic excitation.

Exciter And Pickup Placement

Almost any position may be used for placement of the exciter coil and optical pickup. With proper magnetic shielding around the exciter coil, it can be operated in close proximity to the optical pickup without any magnetic interference to the pickup. However, there are advantages to certain placements. If a particular partial is being measured, then neither the pickup nor the exciter should be placed near a node for that partial. A node is a point along the vibrating string at the points 1/3 and 2/3 of the way along the string, so neither the exciter nor the pickup should be placed there.

For convenience in studying a number of partials, it is useful to place the pickup at a point where all the partials under study may be detected. Also, the degree of physical movement of the string is much greater for the fundamental than it is for the higher partials. If you want to use one pickup position for measuring the fundamental and a number of partials, the middle of the string will give too much response on the fundamental and too little response on the harmonics. For this reason, it is good to avoid the middle of the string. We found it useful to position both the detector and the exciter within 10% of the end of the string.

Under certain conditions, it may be advisable to place the exciter at a node for the third partial (1/3 of the length of the string). The excitation waveform is a square wave. Signal theory tells us that a symmetrical square wave is composed of a sum of odd-numbered sine-wave harmonics. This means that the third partial is quite strong in our driving signal. Therefore, when measuring the fundamental, the string might be responding to the third partial component of the driving signal as well as the fundamental component.

Usually, the interference by the third partial is not a problem for the following reason. The inharmonicity of the third partial is usually high enough so that the driving frequencies that generate any meaningful response for the fundamental are well separated from the driving frequencies whose third partial content might generate a third harmonic response in the string. This means that you can easily restrict the range of driving frequencies to those that generate the response at the proper partial.

But some bass strings were found where this was not so. The third

partial response of the string was so close to the exact multiple of three times the fundamental frequency that one driving frequency could be exciting both the fundamental response and the third partial response at once. In these cases, the fundamental was measured by exciting the string at a node of the third partial so as to suppress the third partial response.

Since the square wave driving signal contains only odd harmonics, the fifth partial is the next one that might cause some spurious response when probing a fundamental. But the amplitude of the fifth partial is even lower than the third partial. And the inharmonicity of the fifth partial was so high that in every case, the frequencies that generated fundamental response and fifth partial response were well separated.

A First Attempt At Peak-Finding

Once the magnetic exciter and the optical pickup were built, we tried to find resonant frequencies by programming a computer to control the frequency of the exciter in order to find the frequency where the amplitude of the response was the highest. The idea was to vary the frequency in an intelligent way, and based on the strength of the response, determine the frequency of the resonance. In order to save time, the search for the center frequency was narrowed by the knowledge of where it ought to be. When searching for the fundamental, the computer program computed the nominal frequency based on the note and the octave number. This put us somewhere near the resonance response. Our first attempt at finding the resonance was to try moving the frequency in jumps of 2 cents up and down. At each trial frequency, the excitation was applied for a given period of time to give the response time to settle. After two frequency responses were measured, the trial frequencies were moved in the direction of the larger response. The process was repeated until, hopefully, the trial frequencies would gravitate to both sides of the peak response, as shown in **figure 3**.

In some cases, this method worked fine. In other cases, the frequency would just not settle down. The computer kept varying the frequency over a wide range. It turned out that the difficulty was the result of false beats. The strings with false beats do not have a single simple peak in the response curve. Instead, the response curve will have two or more peaks, as shown in **figure 4**. This brings up a question of definition. If there isn't one single peak, then what frequency do we call the "center" frequency? We can't just take the average frequency of the two peaks

Figure 3

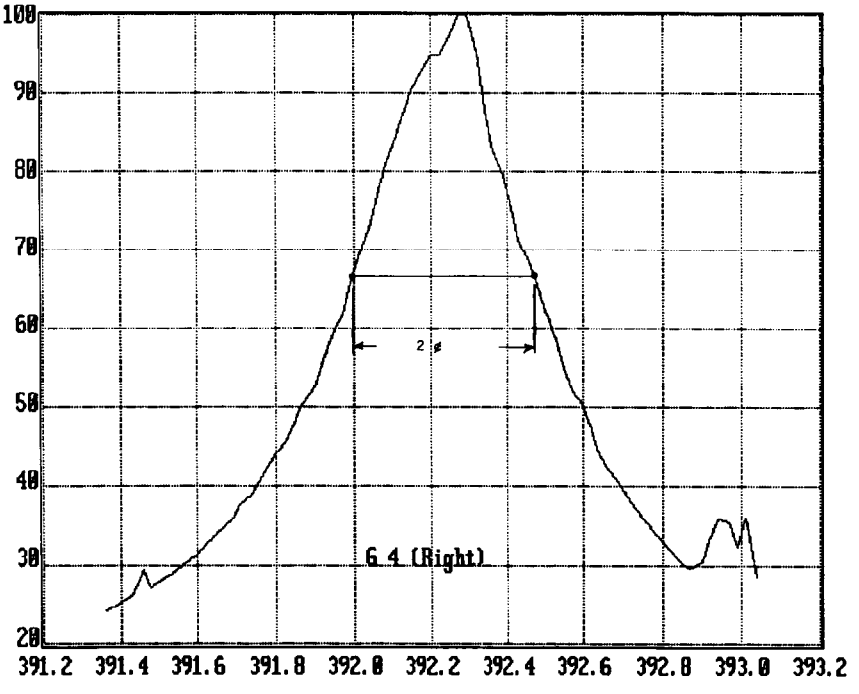
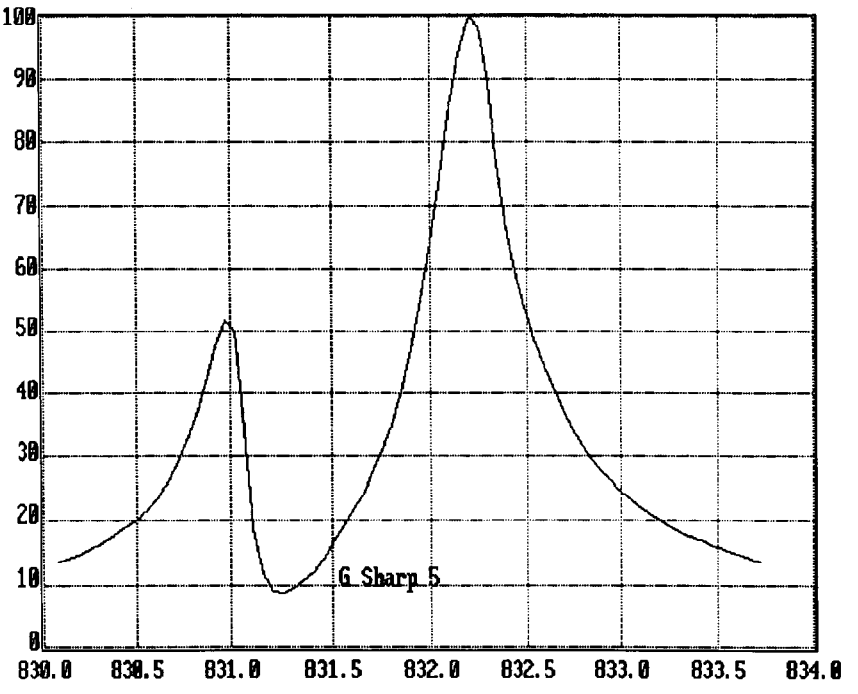


Figure 4



because sometimes there are more than two peaks, or else one peak is noticeably higher than the other.

We decided that automatic settling on a frequency of peak response was impossible. If the frequency were to be defined at all it would have to be in terms of a calculation based on a methodical sweep of the entire vicinity of the partial response.

The Final Method Of Peak-Finding

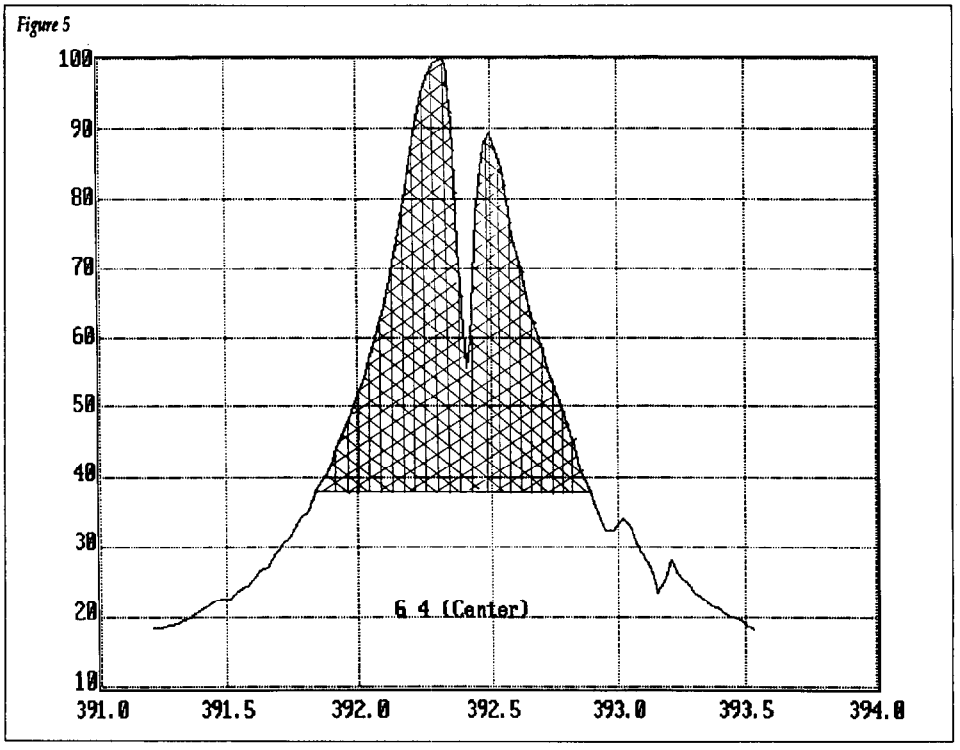
We define the frequency of a harmonic to be the weighted average of the frequencies in the vicinity of the partial response. There are several ways of computing a weighted average, and several ways of defining what we mean by the "vicinity" of the partial response. Here is how we proceed.

We start by finding the general area of the peak response by varying the frequency manually. Once a fairly large response is found, we lower the frequency to well outside the response region, and then manually raise the frequency until the response rises to about half of the "peak" response. Once that point is found, the computer is given control of the frequency. The frequency is automatically moved in phase-coherent jumps of 0.1 cents, allowing settling time after each jump. Then the response detected at the optical pickup is read and factored into the weighted average. The process continues until the response rises, and then drops back down, to a level equal to the level where the frequency sweep started.

If the response curve is as shown in **figure 5**, then the shaded region represents the region of frequencies over which the sweep is taken. The shaded region also shows that, for each frequency, the response to that frequency exceeded the base-line response (the response at the edges of the region of interest) by a certain amount. For each frequency in the sweep, we take the square of the amount by which the response exceeds the base-line response, and use that number as the weight in a weighted average.

For example, suppose that the following table comprised the entire frequency sweep. The third column gives the computer weight for each frequency, and the fourth column give the weight times the frequency. If all the numbers in the fourth column are added up and divided by the sum of the weights (the numbers in the third column), the result is the weighted average.

Figure 5



Frequency	Response	Weight	Weight x Frequency
391.8	38	0	0.0
392.0	51	169	66248.0
393.2	70	1024	401612.8
392.4	55	289	113403.6
392.6	73	1225	480935.0
392.8	38	0	0.0

The sum of column four is 1062199.4 and the sum of column three is 2707. Dividing 1062199.4 by 2707 gives a weighted average frequency of 392.39 Hz. This weighted average of frequencies is stored for this partial.

We chose to weight each frequency according to the square of the amount by which its amplitude exceeded the amplitude of the "edge" frequency (the frequency where the vicinity of the resonant peak starts). The vicinity of the resonance is defined to be the frequencies where the response amplitude is about half the highest response. With these definitions, the largely symmetric character of the response curve made the definition of center frequency fairly insensitive to where we start forming the weighted average.

The settling time for each step in the frequency sweep must be set long enough so that the response is to the current frequency, not to the previous frequency. Since low notes take longer to die out, they also take longer to settle in their response to a constant excitation. We decided to use a settling time that was inversely proportional to frequency. The settling time is normalized at two seconds for

1000 Hz. This means that the settling time for C1 (32.7 Hz) is over 60 seconds. If you watch the amplitude of the response during this 60 second settling time, you will see that it really takes that long for the response to C1 to settle completely. If a typical scan involves about 20 points, then it takes over 20 minutes to find the exact center frequency of the fundamental of C1. For the higher notes, if the computed settling time was less than one second, we just used a minimum one second settling time anyway.

After the frequencies have been determined for the fundamental and the desired partials, the computer calculates the inharmonicity of each partial from the deviation between the appropriate multiple of the fundamental and the actual frequency of the partial.

Things To Watch Out For

The method of using an optical pickup to measure string response is very sensitive. Especially with the low bass notes, as response is indicated optically even when the sound is too quiet to be heard. It must be remembered that the piano, the soundboard, the string and the pickup form the equivalent of a sensitive microphone. The string will respond to sounds conducted through the air and to vibrations conducted through the piano frame. These responses could interfere with the desired responses and distort the data. For this reason, the piano should be in a very quiet place, and it should be resting on a solid floor with little vibration. We checked the noise level by turning off the excitation and watching how far down the response goes after a sufficient settling time.

Another form of interference is optical. The infrared photodetector is sensitive to ambient light as well as the light from the LED. If the ambient light is varying, then those variations will be detected as a false amplitude. Fluorescent lights are especially bad and should be avoided. Even incandescent lighting produces large 120 Hz variations. We recommend blocking off ambient light from the photodetector as much as possible. Ideally the frequency scans should take place in total darkness and complete silence (except for the sound being produced by the excited string). Again, you can measure the effect of optical interference just as with acoustical interference — by turning off the magnetic excitation and measuring the base-line response signal.

Certain obvious precautions must be taken with regard to fixturing. The supporting structure for the optical pickup and the magnetic exciter need to be solid and stable. In some cases, the exciter may need to be positioned within 2mm of the string in order to get sufficient response to be measured. If that distance is allowed to vary during the frequency sweep, the amplitude of the excitation will vary as well. This could skew the response curve enough to shift the calculated center frequency. Also, the optical pickup needs to be held in position. In order to assist in positioning the pickup, we brought the DC-coupled pickup signal into the computer on another channel. This way we could tell when the string was blocking about half the light beam. We used this signal only during fixture setup. When measuring response during a sweep, we used the AC-coupled and rectified signal.

Since the actual inharmonicity calculations are based on the comparison of fundamental and partial frequencies that were measured at different times, care must be taken to ensure that the tuning does not drift during the measurement. Recall that it takes 20 minutes to find the fundamental of C1. If, during that time, the temperature or humidity of the air is allowed to vary, then the partial frequencies will not be comparable to the fundamental. It is best if the piano is extremely stable (not recently tuned) and the environment is kept as constant as possible during a measurement. If fixturing changes are necessary between partial measurements, those changes should be done without pressing on the soundboard or doing anything that could affect tuning, however slightly.

Applications

The following inharmonicity measurements (in cents) were made on a 6'8" Kawai grand.

C1	(33 Hz)	2nd= 2.2	3rd= 6.5	4th= 4.5	8th= 15.7
G1	(49 Hz)	2nd= 1.8		4th= 3.1	8th= 8.3
B1	(62 Hz)	2nd= 1.9	3rd= 3.0	4th= 4.2	
C2	(65 Hz)	2nd= 2.5	3rd= 2.9	4th= 4.3	
E2	(82 Hz)	2nd= 3.4		4th= 6.0	
A#2	(117 Hz)	2nd= 0.7	3rd= 0.6	4th= 0.8	
C3	(131 Hz)	2nd= 1.1	3rd= 2.4	4th= 2.8	
G3	(197 Hz)	2nd= 1.5			
B4	(247 Hz)	2nd= 0.7	3rd= 2.2	4th= 3.4	
C4	(262 Hz)	2nd= 1.1	3rd= 2.0	4th= 3.7	
D4	(294 Hz)	2nd= 0.8	3rd= 2.1	4th= 3.8	
D#4	(311 Hz)	2nd= 0.9	3rd= 2.4	4th= 4.2	
G4	(393 Hz)	2nd= 1.0		4th= 5.6	
C5	(523 Hz)	2nd= 1.9	3rd= 4.9	4th= 9.4	
C#5	(554 Hz)	2nd= 2.1	3rd= 5.5	4th= 10.1	
G5	(787 Hz)	2nd= 3.4			
C6	(1047 Hz)	2nd= 5.8	3rd= 14.9	4th= 28.0	
G6	(1574 Hz)	2nd= 9.7			
C7	(2093 Hz)	2nd= 19.6			

If one were to design a tuning for this piano, it becomes obvious that the second and fourth inharmonicity numbers are incompatible. That is, it is impossible to find one tuning that produces zero beats for both the second and fourth partials when compared with the fundamental of the higher-octave notes.

For example, take C5. In order to make the second partial zero beat with the fundamental of C6, C6 needs to be stretched 1.9 cents higher than an exact octave above C5. And to make the second partial of C6 zero beat with the fundamental of C7, C7 needs to be stretched 5.8 cents higher than an exact octave above C6. Satisfying these two second partials means that C7 needs to be stretched 6.7 cents compared to C5. But in order to make the fourth partial of C5 zero beat with the fundamental of C7, C7 cannot be stretched both 6.7 cents and 9.4 cents at once.

One might decide that a particular partial is more important, and tune to minimize beats with that one. Or, one might split the difference and stretch C7 8 cents compared to C5 in an attempt to minimize the beats on both the second and fourth partials. These are mostly artistic value judgments.

The pattern of inharmonicity numbers does not lend itself to a neat, uniform formula. The inharmonicity numbers depend greatly on the points in the scale at which wire sizes change. They depend even more so on the type of wire construction (copper-wound versus bare wire).

Much work remains to be done. One could measure the inharmonicity of strings in unison to see how much variation there is between "identical" strings. One could measure the inharmonicity of a number of pianos of the same brand and style. However, we must start with an unambiguous means of measuring inharmonicity. In view of the difficulty of the problem, with previous methods it is not clear that two people with the same equipment measuring exactly the same string will get the same answers. One problem with involving people too much in the process of measurement is that they can unconsciously skew the data to see what they want to see. This is especially likely when viewing an ambiguous visual pattern on a tuning device. It is something like seeing pictures in the clouds. We need to use completely objective means to make completely objective measurements. That is why we chose to use a computer program to select the center frequencies, based on the response curve.

Beyond inharmonicity, the methods developed here have other applications. For example, by analyzing the width of the response curve at the half-amplitude point, one could infer the "Q" factor of the resonance. The "Q" factor is a parameter defined in engineering that relates to the rate at which an oscillation decays. A string with an abnormal Q factor may indicate a problem that can be corrected (such as a loose pin in the soundboard). By comparing the Q factors of the different partials of a single string, we begin to see how different partials die out at different rates, giving the note a changing tonal quality as it decays.

The response curve is also the most sensitive way to measure the effect of false beats. The two-peak curve is obvious even in cases where no false beats are heard. The obvious two-peak curve of **figure 4** describes a string that, when struck, produces a noticeable 1.2 Hz beat. But the peaks in **figure 5** are so close together that no false beats are heard, yet it is clearly not a single pure peak.

Since this new method relies on continuous excitation instead of a hammer strike, some mention needs to be made about the correlation between the two cases. After all, the piano is struck, not continuously excited, in performance. How do we know that the frequency of maximum response to continuous excitation matches the frequency of the damped oscillations that are produced when the note is struck? Actually, they are not the same. The effect of the acoustic loading on the resonance is to slightly lower the frequency. In terms of the Q of a vibrating string, the frequency depression factor is: (See top right).

In terms of cents, this factor gives an offset of -.5 cents for a Q of 20, and an offset of -.08 cents for a Q of 50.

$$\frac{1}{\sqrt{1 + \frac{1}{4 \cdot Q^2}}}$$

Since all piano strings have a Q much higher than 50, this effect is negligible.

Improvements

The prototype method developed is still too manual. The exciter coil is usually repositioned for each partial. This could be remedied by having the computer control the amplitude as well as the frequency of the exciter. That way the computer could keep the response within a measurable range for each partial measured, and do a complete string unattended. The process is time-consuming, and only suitable for laboratory use, but the time should not matter much if the process can continue while technicians are doing something else.

Another item that could be improved is the pickup. We used one pickup for all the measurements we made. At the very least, the distance between the LED and the photodetector needs to be adjusted for bass and treble strings. Also, the masked beam width was a compromise. On the bass strings, even an inaudible note produced a large signal. Conversely, on the high treble strings, very little string movement is associated with the vibrations. To compensate for the low indicated response, we placed the exciter especially close to the string. It would be better if a special pickup were designed just for measuring high treble strings. This pickup would have a smaller masked beam width so that a smaller vibration would be needed to produce the needed percentage of change in blocked light.

Figures 3,4, and **5** show the relative response of a string as a function of the exciting frequency in Hertz.

[Note: For more information about this process, the author may be contacted at Real-Time Specialties, 6384 Crane Road, Ypsilanti, MI 48197, (313) 434-2412 -jh-]

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83440

841 SALT LAKE CITY, UT

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P. O. BOX 113
RUPERT, ID 83350

993 CENTRAL WASHINGTON

INDALECIO SALAZAR
P. O. BOX 334
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98932

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LEXINGTON, KY 40502

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LAURA KUNSKY
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ROUND LAKE BEACH, IL 60073

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6201 LOWER 161ST STREET W.
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55068

THOMAS R. YOUNG
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1993 EVENTS CALENDAR

MAY	8	**St. Louis One Day Seminar** Contact: Bill Trefts, 1453 Colebrook, Webster Groves, MO 63119, 314-962-2143
JULY	14-18	**PTG 36TH Annual Convention & Technical Institute** Milwaukee Hyatt Regency, Milwaukee, Wisconsin Contact: PTG Home Office, 3930 Washington, Kansas City, MO, 64111-2963 816-753-7747
SEPT	25	**Pomona Valley Chapter Annual Seminar** Contact: John Voss, 2616 Mill Creek Road, Mentone, CA 92359
SEPT-OCT	30-3	**Ohio State Conference** Holiday Inn-Dayton Mall Contact: Kathy Shaw, 325 W. Center College Street, #129 Yellow Springs, OH 45387, 513-767-2555
OCT	15-17	**Texas State Seminar** Marriott Hotel-Houston Contact: Ray Whitmore, 7126 Sonnet Glen, Houston, TX 77095, 713-859-7535
NOV	4-7	**New York State Convention** Westchester Marriott Contact: Michael Meade, 27 Perch Drive, Mahopac, NY 10541, 914-528-3365
NOV	11-14	**North Carolina State Conference** Omni Hotel-Richmond, VA Contact: Lewis Spivey, 15 Rachel Drive, Nashville, NC 27856, 919-937-4777

AUXILIARY EXCHANGE

Dedicated To Auxiliary News and Interests

June is busting out all over, or at least it should be by the time you read this. The Jonquils in our yard are most beautiful this spring. When the big snow came a month ago, I thought our flowers were doomed but they are really more robust than ever. It certainly is wonderful seeing the buds come out on the trees and shrubs. Nature in all its glory.

This is the month that you must send in your reservation to the national office in Kansas City for the convention in July. You have made all your plans now and are going to take the kids and make a family vacation either before or after the convention. Call up all your friends in the Midwest and tell them you're coming. Don't forget to ask a friend to come in to water the plants and feed the dog and/or cat. We are going to have a live-in dog sitter because our Minnie will have puppies by then and I can't take them all anywhere else. Remember, last time she had puppies on Christmas Eve? Well, she is due around June 15th this year. It will be hard to leave them when they are so young but I'm sure Minnie will know what to do. She did last time. It's amazing how nature knows what to do. She never had any instruction but when they were born, she just took over and managed very well.

At convention, be sure you plan to stay for the PTGA Council Meeting. Remember, just because you may not be the delegate, you certainly are welcome to join in on the discussion at the meeting and tell your delegate how you feel about a subject. We discuss interesting topics that pertain to all of the members and you should be there to hear them. This is *your* organization and we *want* your input.

I also would like to know what you would like to hear in these Auxiliary pages. Please give me some ideas to cover. Would any of you like to write an article for one month? Did any of you cover a seminar or state convention? We would like to hear what the chapters are doing when they get together. Would one of the chapters send us a story of what happens at a typical meeting? Since most of us are members at large, I think it would be fun to hear what you all do when you get together. Please share with us. Come see what's brewing in Milwaukee. See you all at the Hyatt in July.

Phyllis Krahmer Tremper
President

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1993 Convention

Auxiliary Schedule
July 14-18

Wednesday, July 14	
8:00 am	Hospitality Room Open (Regency A) Milwaukee PTGA members on hand to answer questions about the city.
9:00 am	Executive Board Meeting
9:00 am	"German Heritage" walking tour with Donna Moberg and Kathy Reich (Group will meet in lobby of hotel).
7:00 pm	Piano Technicians Guild Opening Assembly (Regency Ballroom)
Thursday, July 15	
9:00 am	Auxiliary Opening Assembly (Regency C)
9:45 am	Get acquainted coffee and danish.
10:15 am	Member-At-Large Meeting.
10:30 am	Council Meeting and Election of Officers.
1:30 pm	Educational Program: "PTG-Its Past, Present, and Future," by Charles Huether (Regency D)
3:00 pm	Past Presidents' Reception (Regency C)
3:30 pm	Auxiliary Tea: Program by 1993 Auxiliary Scholarship Recipient-Performance by Leslie Cook. (Regency C)
7:30 pm	Performance by 1993 Auxiliary Scholarship Recipient Leslie Cook. Baldwin Reception immediately following. (Regency Ballroom)
Friday, July 16	
8:00 am	Hospitality Room Open (Byron Kilbourn)
8:30 am	Milwaukee City Tour-This bus tour will take you to Domes, Pabst's Mansion and Miller Brewery. An afternoon break for lunch will be taken at the "John Ernst" restaurant. Shopping on Grand Avenue & Third Avenue and more sights from the bus.
5:00 pm	Return to the Hyatt Regency Milwaukee.
9:00 pm	Yamaha Reception. (Regency Ballroom)
Saturday, July 17	
8:00 am	Hospitality Room Open (Regency D)
9:00-11:30 am	Educational Program: "Sign Language", by Marilyn Raudenbush.
12:30 pm	Auxiliary Installation Luncheon. Installation of new officers, by Eileen Guthrie. Entertainment provided by Fred Tremper. (Regency C)
3:30 pm	Post-Council Board Meeting
7:00 pm	Piano Technicians Guild Golden Hammer Banquet (Regency Ballroom)
9:00 pm	Steinway Concert, featuring Roger Williams (Regency Ballroom)
Sunday, July 18	
7:00-7:30 am	Chapel Service (Regency D)
8:00 am	Hospitality Room Open (Gilpatrick)
9:00-11:30	Continuation of Post Executive Board Meeting

If you are planning to attend the 1993 Convention, please remember that it is important to send in your registrations early to take full advantage of the early bird discounts. Auxiliary tour space is limited. We need to hear from you and your tuner spouse soon so that we can insure a place for each of you. Page 22 of this issue offers a convention registration form. No time like the present. It's a wonderful way to invest in your future and meet old friends and new!

Discount Registration Ends June 18, 1993

1993 Membership Directory Update

Please add the following list to your 1993 edition of the PTG Directory.

Renewals:

Helen Hollingsworth
2271 E. SV-Paintersville Road
Xenia, OH 45385
513-376-1671

Nancy Strouss
2278 Arcadia Street
Lima, OH 45805-3539
419-223-7241

Mabel Hiatt
30 East Gray Street
Sandston, VA 23150-
737-1387

Barbara Fleming
15567 E. Brown Place
Aurora, CO 80013
680-7467
January 12

Marge Meyermann
108 E. Sutton Place
Wilmington, DE 19810
302-475-3842

New Members

Rose Marie Farrar (David)
1300 Shrine Road, Box 160
Springfield, OH 45504
March 26

Sharon Wenzel (Lloyd)
66107 Otter Road
Montrose, CO 81401

Laura Venitz (Don Rose)
3004 Grant Road
Regina, SK, Calgary
S4S 5G7, Canada

Corrections

- Lisa Weller is the PTGA member. Her husband is Gary.
- Lynette Hollingsworth is incorrectly listed as Lynette Hong.
- Current Address on file at Home Office for Dessie Cheatham:
  1021 Cedars #240
  McPherson, KS 67460

CLASSIFIEDS

Classified Advertising rates are 35 cents per word with a $7.50 minimum. Full payment must accompany each insertion request. ***Closing date for placing ads is six weeks prior to the month of publication.***

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DISPLAY ADVERTISING INDEX

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"Why Should I Be A Member of the Piano Technicians Guild?"
This brochure answers typical questions from potential members of PTG. It describes membership categories, RPT exams, benefits of membership and includes our Mission Statement. A form is included to request a membership application for further information. Chapter officers as well as individual technicians should have these. *There is no charge for this brochure.*

"How Should I Take Care Of My Piano?"
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Used to keep in touch with clients and provide them with interesting information, the newsletter projects a positive image of piano playing and conveys your commitment to your customers. The first issue of "The PTG Soundboard" contains articles on the recent trend of adults starting to take piano lessons, the benefits of piano playing to child development, and how to find a qualified technician, along with photos, a quiz and trivia. Printed on textured paper with attractive typefaces and design, 2 color. 4 pages. 8 1/2 x 11.
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Bulletin #2: Regulation
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Topics include, "How does humidity level affect my piano's tuning?", "What is relative humidity ?", "What can be done to minimize humidity problems?" and "How will humidity control benefit my piano?" A chart is provided for recording relative humidity levels and pitch data. Together with an accurate hygrometer, this bulletin helps you in diagnosing climate-caused stability problems and recommending solutions. Clients receive educational material on the effects of climate as well as documentation of their specific problem.

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This edition describes voicing, explains the difference between tuning and voicing, what is good tone, how the technician voices a piano and also explains to the customer indications that their piano may need voicing.

Bulletin #5: Finish Care
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☐ The PTG Soundboard			
☐ Bulletin #1: Pitch Raising			
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Tech Gazette

Yamaha Piano Service June, 1993

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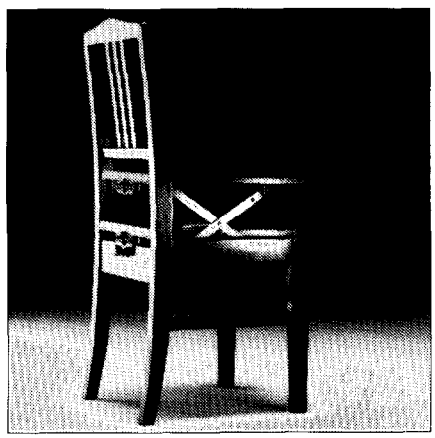

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PIANO TECHNICIANS Journal UPDATE
FOR MEMBERS OF THE PIANO TECHNICIANS GUILD, INC.

LETTERS PROS & CONS LETTERS

The following letters have been submitted concerning the issue of membership classification which will be under delegate consideration during the 1993 Council Session, July 13-14 in Milwaukee, Wisconsin.

PTG for RPTs

Willem Blees, RPT
St. Louis, MO

Once again the issue of membership classifications is coming before Council. Once again we are going to debate who has the right to do what, with which and for whom. The debate will never end until we make the decision to become an organization of only one classification. I have written about this once before, and it is time to resurrect the cry again, and make another plea for the PTG to be for RPTs only.

Our Bylaws state that "Membership is open to all individuals with a professional or *avocational* interest in piano technology." (Art.II, Sec. B1). In other words, anyone who is interested in pianos can be a member. If the PTG wants to keep its membership open like that, then perhaps a more appropriate name for our organization should be the Piano Technicians Society, or the Piano Technicians Association. A society is defined as "any organized group of people joined together because of some interest in common." An Association is defined as "an organization of persons having common interests, purposes, etc."

But we are called the Piano Technicians *Guild*. According to Webster's Dictionary, a ***guild*** is "a union of persons in the same craft or trade to uphold standards and protect the members." According to that definition, only the RPTs of our organization would qualify as members of the PTG, because they have passed exams that set a standard. Associates would not qualify, because they have not proven themselves to be able to perform at the standards of an RPT. If we want to call ourselves a "*Guild*," by the true meaning of the word, then we should only allow as members those piano tuner/technicians who have passed all the exams, proving that they can "uphold standards." This is the only way in which the Piano Technicians Guild can remain a true "*Guild*."

Unfortunately, the PTG has gotten itself into a financial situation whereby it cannot afford to become a real "Guild." If we disassociated ourselves from all Associate members, the organization would fall on economic hard times. What is needed is a plan that would keep the financial loss to a minimum, while at the same time make it financially advantageous for non members to subscribe to the *Journal*, come to chapter meetings, and attend our seminars and conventions, in order to entice them to become a member of the PTG. What is needed is a program where these untested individuals can participate in our organization, but not belong to it.

There are basically 3 different kinds of Associates: Those who are learning to become an RPT, those who are only technicians, and those who are not tuners or technicians but support PTG. The person who wants to become an RPT or who is a technician only, can become a "Friend of the (chapter name) Chapter of the PTG." He/she will only pay chapter dues and may only participate in chapter functions, including being secretary or

treasurer. As a "Friend of the Chapter," and only through a chapter, he/she may subscribe to the *Journal* at 80% of the non-member subscription rate, and would be allowed to attend seminars and conventions at reduced "Friends of the Chapter" rates (not "non-member" rates). He/she would not be a member of PTG, would not have any rights, nor receive any benefits. He/she would not be able to advertise membership in the PTG, nor use any of the Guild's literature.

For an Associate who is neither a tuner nor technician, but wants to be associated with the PTG, he/she can become a "Supporter of the PTG Foundation," or a "Supporter of the (chapter name) Chapter of the PTG." A Foundation Supporter would need to be sponsored by an RPT, and approved by the Executive Board. For a fee he/she would get a subscription to the *Journal*, get reduced rates for advertising and exhibit fees, and be allowed to attend PTG functions at reduced rates. He/she would be assigned to a chapter, but would not be required to pay chapter dues. A Chapter Supporter could attend and participate in chapter meetings and functions, receive the chapter newsletter, and be allowed to attend PTG seminars and conventions at reduced rates.

Since this classification will only be supporting the PTG Foundation or a PTG chapter, it is the intention to allow businesses such as stores, manufacturers, and supply houses to be "Supporters of the PTG Foundation" or "Supporters of the Chapter." The fee structure is something that would need to be worked out, but it would be based on "the more you pay the more you get."

At first, there would probably be a loss of revenue from not having the Associates as full paying members, but not as much as some people might think. First of all, if all Associates were given one or two years to become RPTs before losing their membership, most of them would probably take the exams, and stay in the Guild as an RPT. After that, there would be an increase in *Journal* subscription income from those *Friends* who subscribe to the *Journal*, which would help offset some of the loss of revenue from dues. Also, the fees from the *Supporters of the Foundation* could make up for some of the lost dues revenue. Fees from Chapter Supporters could help a chapter's treasury.

The bottom line, though, is that if RPTs feel strong enough about having a truly professional *"Guild,"* they should be willing to pay higher dues, which might only be $30 - $40 per year. Even at $175 - $200 per year, membership in the PTG is still one of the best bargains around.

At past Council sessions one of the arguments for having Associates pay more to take the exams was so that it would make becoming an RPT more meaningful. It will be even more meaningful if a prospective member was told from the very beginning that the only way to belong to the PTG is to pass all the exams and become an RPT.

The issue of what to do with Associate members is going to be with us until we have a truly professional organization of only RPTs. How many more years are we going to debate this issue, and waste time on it? When are we going to become a true Piano Technicians *Guild?*

LETTERS

PROS & CONS

Continued

Some Important Issues

Bob Russell, RPT
President, Cleveland Chapter

Fellow Members:

I'm writing this letter to highlight some of the important issues we will be discussing in Council this year.

The first issue is the marketing program. We've made tremendous strides in a short time with marketing. I can personally report the brochures and technical bulletins are benefitting my business. We must now make this information available to everyone; PTG members, teachers, dealers, and other associations. This would help us to expand our ability to educate the public on the benefits of *proper piano care and PTG*. We cannot accomplish this goal by limiting our information source to RPT members. We need greater marketing exposure if we are going to effect a meaningful change in the marketplace and increase business for ALL of our members.

Another issue of importance is membership restructuring. The Cleveland Chapter recommends that we change the name Associate to *supporting member*. This change would create a clear distinction between registered members and non-registered members. It denotes a positive association without endorsing the individuals.

I have a strong opinion about improving the ratio of RPTs and Associates (supporting members). Our organization cannot move in a positive direction with 40% of our members as associates. It creates an enormous amount of problems locally and nationally, and serves to divide us socially and economically. I firmly believe we can correct this situation through an educational program to educate associates. We should not resort to demeaning titles that create resentment and dwindling membership. One minimal standard that PTG should give to all its members is that of respect. We want all our members (at whatever level) to be proud of belonging to PTG. This is not only right, it's smart business for everyone.

On the issue of upgrading associates to RPTs, we should establish at Council guidelines for

a comprehensive educational program to provide training so our associates possess the skills necessary to upgrade to RPT. The program should include:

- A national and grass roots tutorial network.
- Additional "upgrading" classes at national and regional conventions and seminars.
- More *Journal* articles devoted to this subject.

According to our Member Needs Study, 81% of our Associates favor establishing an educational program to help them upgrade their status. The overwhelming reason they are not upgrading is that they don't feel they are ready or prepared, especially in their aural tuning skills, to take the test. This program, if administered properly, will accomplish the vital goal of upgrading Associates to RPT and will bring us all closer together.

For PTG to continue strong into the 21st century we must:

A. Make our marketing materials more accessible to the public.

B. Change the title "Associate" member to "Supporting" member to provide a clear distinction to the public between registered and non-registered members.

C. Provide education and training classes for "supporting" members to upgrade to RPT.

This summer at Council, we have two paths we can take. We can choose to spend two days cleverly devising ways to *divide* ourselves into competing member groups . . . *or* . . . we can spend all of our energies and talents positively to discover ways to unite our members, encourage upgrading for all of PTG . . . Which way do you prefer? . . . Obviously, I recommend the latter.

LETTERS

PROS & CONS

Continued

I'll Pass, On "Apprentice"

Chris Day
Boston, MA Chapter

From the Twelfth Century, Guilds were established to protect the interests of their members. For most of the intervening time they were what today would be called "closed shops." They were difficult to get into and they jealously guarded their territories denying employment to others outside the Guild and protecting their trade secrets with sometimes lethal enthusiasm. This is not to say that they did no good for they did indeed keep alive the quality and knowledge of their respective crafts.

All clubs, from yacht clubs to the Masons, continuously struggle with the conflicting desires to have everyone join and be inclusive and to keep the riffraff out and be exclusive, nothing new here. While there might well be valid arguments to have the PTG be like the old time guilds, certain realities obstruct this.

The majority of piano technicians do not belong to the Guild. Some of them, it should be noted, are undoubtedly master craftsmen at their trade. I have often asked those who are not members or who have let their membership lapse why this is so. Almost universally I get two answers. The first is that membership does not effect their economic prosperity and the second is that PTG is too elitist for them. In addition the very nature of piano technician work seems to appeal to the rugged individualist who does not like being regimented.

The foregoing suggests that PTG will never be able to be a closed shop even if it desires that. This means that to prosper PTG must offer a climate where those outside PTG want to become members. To expect someone with, say, twenty years experience as a rebuilder to be accepted as an "Apprentice" is both unreasonable and insulting to that person. To require that someone who, say, has twenty years of experience as a tuner including concert work to take time out to sit a basic tuning exam is also unrealistic. Therefore the only persons likely to enter are neophytes who hope that the letters RPT might give their starting career some sort of a boost.

I note that by definition the movers and shakers of PTG are required to be RPTs, however I suggest that the most important people for the Guild are in reality the non-registered members and those who are not now members because these people are the future membership and thus the future of PTG.

I do not for a moment mean to suggest that the exam should be eliminated or that is does not indeed denote a particular level of competence. I would point out, however, that many technicians have obtained their credentials from piano technology institutions, (which cannot be rescinded and which require no annual lucre for maintenance), and see no need for alternate and possibly lesser credentials. That PTG declines to recognize the credentials of any of the major piano technology institutions should itself be a point of discussion.

One question I have not seen asked in your survey is "What do you think it would take to encourage other technicians to join PTG?" The executive would do well to ponder this question.

Lastly, I am sure that like many other non-RPT members, if I were reclassified as an Apprentice and required to so state with any reference to the Guild that I would just never mention the Guild. I might well consider allowing my membership to lapse. (Another question not on the ballot). Apprenticeships are worthy and

honorable callings in Europe but in the United States of America I would fully expect to be thrown out of the door if my business card informed the owner of their beloved and costly instrument that I was just an Apprentice.

An Apprentice Program

Jerry Gregson
Phoenix, AZ Chapter

I joined PTG because I wanted to associate with successful tuners hoping some of their experiences would help me. I have not been totally disappointed but, I do have a suggestion based on my experience.

Since I joined PTG I've heard and read a lot about changing names or designations. One name change under consideration will affect me as an Associate member but unfortunately won't improve my performance as a tuner.

I'm referring to the discussion on Associate or Apprentice designation. The dictionary defines an apprentice as "One legally bound to work for another for a designated amount of time in return for instruction in a trade, art or business." Or, "One who is learning a trade or occupation." An associate is, "One who has joined another or created a relationship with a group. By definition I am both an associate and an apprentice. With one exception, I am not working with anybody else to get instruction.

I believe there should be an apprentice program for people such as me. I would have been more than a little pleased if one of the requirements for membership in PTG had been to work with an experienced tuner or tuners to bring my level of confidence and expertise up to, say, what level an associate apparently should be. I'm addressing only the issue of inexperienced tuners. Exempted, of course, would be those people coming into the chapter who are already RPT rated.

Such a program would require a dedication on the part of a few who would be willing to share their knowledge and techniques. My bet is that every chapter has them; people who are willing to help new people get off to something a little better than a trial and error start. A bad tuning by a beginner creates a negative image for all technicians and I believe this is what PTG would like to avoid. A good apprentice program would help. And I believe the PTG should develop such a program for implementation in local chapters.

As you know, our chapter has two programs going. One is studying for the RPT exams and the other in the restoration of a Steinway upright. I have not felt qualified to begin studying for PTG exams. I am far from being satisfied with my tuning abilities and I think that has to come first. On the other hand I am working on the restoration program and finding it a real learning experience. There are qualified people guiding, helping and explaining each step of the way and I like that. But it isn't tuning and that is where immediate income will be generated.

On the back of the page of the flyer in the News was Will Nieberding's "Confessions Of A Tuner." I want to quote a paragraph:

"In retrospect, I can understand why I had to retake some of the testing. Most of my training for piano work had to come from the "school of hard knocks." I never had the decided advantage of attending some of the fine piano technology schools, now peppered throughout the states. (Nor did I). The Guild convention classes and outreaching members have been my gradual way of gaining right knowledge."

I've had a rather extensive business career and am acutely aware of the importance of good customer relations. I am not ready to tune client pianos when I can't get my own tuned to my satisfaction (Maybe I'm expecting too much of the instrument or myself. I don't know.) But then nobody in my peer group has said, 'let me hear what you've done.' Nor is there a requirement for me to demonstrate to an experienced tuner what I can or cannot do.

If this sounds critical of PTG or our chapter, it isn't meant to be. I am merely stating a personal case for the establishment of an apprentice program for new associates to fulfill the mission of PTG as stated in the last line of the President's letter to Associates. "It is essential that we work together to better our careers, our organization and our profession; that is what PTG is all about!"

If we are going to have an apprentice designation let's have an apprentice program!

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Continued

Membership Structure; Past, Present and Future

Danny L. Boone, RPT
Bylaws Committee Chairman

The Past

Since 1986, when the last major restructure of Guild membership took place, PTG has had many new members to join who may not be aware of the background of our current membership structure. Also, many long-time members may have forgotten some details of the previous structure. It may be helpful to take a brief look back at the way it was in order to better understand the way it is now.

For many years PTG had as many as eight membership

categories. Listed below are the titles and description of each category.[1]

Craftsman. *"Craftsmen shall meet the minimum technical requirements set forth in the Bylaws, and shall enjoy all rights of membership without restriction."* This category has always been franchised. The title has gradually changed over the years, and is now Registered Piano Technician.

Life. *"Life members shall be Craftsmen who, because of long or outstanding service to the profession are deemed worthy, or because of permanent disability are granted this status in accordance with such provisions as may appear in the Bylaws."* This category, also franchised, was later replaced by the present Sustaining Member category with some modifications.

Affiliate. *"Affiliates shall be Craftsmen who live outside the American continents and their geographically associated islands, and they may attach themselves to the chapters of their choice, be members-at-large, or, should conditions warrant, may be chartered as a chapter, which would be designated as an affiliated chapter."* This franchised category was eliminated and replaced by the non-member designation of International Correspondent. International Correspondents are billed annually a fee equal to 60% of regular membership dues.

Associate. *"Associates shall be those who are active in the piano field in such capacity that they and PTG can mutually be served by their membership in PTG. They cannot be members-at-large. They may not publicly advertise their membership in the Guild, and may not use the Guild's name, emblems, trademarks or other similar devices."* This was a non-franchised category. Members in this category are now in the current Associate category.

Apprentice. *"Apprentices shall meet the requirements of the Bylaws. They may not publicly advertise their membership in the Guild, and may not use the Guild's name, emblems, trademarks or other similar devices."* This was a non-franchised category, with the dues being the same as for franchised membership. To achieve Apprentice rating, an applicant had to make a grade of at least 50% on each of the three parts of the exam.

Honorary. *"Honorary membership may be conferred by Council action upon anyone who has rendered outstanding service to the profession of piano technology or in the manufacture, design or promotion of pianos."* This non-franchised category remains the same in our current structure. No dues are paid by Honorary members.

Allied Tradesman. *"Allied Tradesmen shall be persons who regularly follow some branch of piano work as their livelihood, but are not qualified tuners. They shall pay the standard fee, but shall not be franchised. They may not publicly advertise as being qualified to service pianos beyond the extent of their personal qualifications. They must be members of a chapter."* They paid the same dues as did Craftsmen.

Student. *"Student members shall be persons beginning the study of piano technology who are unable to pass, or unready to attempt, the qualifying exam for Apprentice Membership. Student members may not publicly advertise their membership in the Guild, may not use the Guild's name emblems, trademarks or other similar devices, and are subject to such additional regulations and restrictions as are set forth in the Bylaws."* Students joined for a period of one year, and were required to renew their application annually, prior to the expiration of their membership. The annual fee, which included Guild and chapter dues, was $40 (1973-Craftsmen dues were $72). They received the Journal, discount convention rates, and were allowed to participate in the optional PTG group insurance program, but were excluded from the death benefit coverage, and could not vote or hold any office. Students were required to apply for examination and reclassification at least once a year.

Since 1986, PTG has had only four member categories: 1) Registered Piano Technician, 2) Associate, 3) Sustaining and 4) Honorary. RPT is the same as Craftsman, Sustaining is the same as Life, and Honorary remains unchanged. All other categories were combined into the current Associate category. RPT continues to be the only franchised membership category.

The membership was restructured in 1986 to *"...simplify the complicated classes of membership down to two basic categories."*[2] Another purpose was to bring the dues for students up to the same level as all other categories. A third consideration was the implication by our legal counsel that the inequity of benefits in our membership categories could possibly be considered discriminatory, and might cause PTG to be the subject of a lawsuit.

The Present

During the past seven years, dissatisfaction has often been expressed by many PTG members in regard to the present structure of PTG membership. This has been the topic of discussion in Council, the Executive Board, PTG meetings, chapters, and small groups of members. Many solutions to the problem have been suggested, ranging from having only one classification—RPT—with our current exams being entrance requirements, to giving all benefits, rights and privileges to all members, technicians and non-technicians alike. While there may be a question as to the best solution, there is no question as to whether or not we have a problem.

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Continued

LETTERS

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Continued

The basic problem inherent in our present membership structure seems to be *inadequate distinction between qualified and not-qualified technicians.* (The term "not-qualified" is used instead of "unqualified" because until the RPT exams are completed we have no way of knowing whether or not a member is qualified to service pianos.) Most of the other problems which are being discussed in relation to PTG membership structure seem to have their source in this basic problem. A careful study of the problem reveals that it is both an external and an internal problem.

External. The difference between qualified and not-qualified piano technicians in PTG is not readily apparent to the public. This is not only because of nomenclature, but also because of our failure to adequately educate the public about PTG.

When members were identified by the titles of Craftsman, Apprentice or Student, there was little doubt as to the qualifications of members who held those titles. Our current titles, Registered and Associate, usually require explanation. (The title of Craftsman was eliminated in 1992.

We are attempting to educate the public through our new marketing program which was the result, in part, of the necessity of having to explain who we are. Disseminating the message that RPTs have been qualified by extensive examinations will help to relieve the problem of distinguishing between qualified and not-qualified members, but some adjustment of our nomenclature might make the job easier.

Internal. The differences between qualified and not-qualified members within PTG has steadily decreased over the past few years. Member benefits are practically identical for all membership categories. Benefits include receiving the Journal, life insurance, optional group insurance, convention discounts, and advertising as a member of PTG. When the new logo is approved it will undoubtedly be made available to all members also. Prior to the restructuring of 1986, the only members who could advertise their membership in PTG were Craftsmen (now RPT).

Interest in eliminating the non-franchised classification and extending all rights and privileges to all members is increasing. The right to vote and the privilege of serving in a chapter or PTG offices is currently limited to franchised members—those who have been qualified by examination. Recently, a proposal was sent by a chapter to the Bylaws Committee to amend the bylaws to allow Associate members to vote on all issues. (The proposal has been temporarily withdrawn.) This proposal would allow all members, non-technicians and technicians, qualified and not-qualified, to vote on all PTG matters.

It is difficult, if not impossible, to determine who, or how many of our members are preparing to become piano technicians or are planning to upgrade their classification by taking exams. The Associate category contains all the members who were formerly identified as Students, Apprentices, Allied Tradesmen and Associates. Add to this the fact that in 1986, PTG membership was opened to "anyone with a professional or avocational interest in piano technology," and you have in the Associate category a conglomeration of anybody and everybody. The old Associate category (as late as 1974, and maybe later) was limited to "those who are active in the piano field in such capacity that they and PTG can mutually be served by their membership in PTG."

It has been said more than once by various PTG members that "we must first determine who we are and what we are about before we can make progress in any other areas." We have an identity crisis, both within and without the organization.

There is, however, another serious problem, one which is an outgrowth of the problem mentioned above, and that is *the lack of incentive for not-qualified members to become qualified.* The Associate category has almost become a lifetime category, as witnessed by the fact that over the past eight years, Associate membership has grown to 40% while Registered membership has declined from 75% to 60%.

Craftsman (now RPT) membership in 1986 was 75% and all non-franchised membership was 25%. Student and Apprentice membership was only 17% of the total membership. One of the biggest problems we now have is getting Associate members to take the RPT exams. This trend will continue as long as the difference between qualified and not-qualified members is indistinct. We may devise all sorts of incentive programs to treat the symptom (disinterest in taking the RPT exams), but until we cure the disease (lack of distinction between qualified and not-qualified members), the problem will persist.

The Future

As we consider restructuring the membership of PTG, it is very important that proposals be based on sound principles, and that the proposals provide solutions to the problems our current membership structure presents. If the principles behind specific proposals are not well thought-out, if the reasons for suggested changes are vague, and if current problems are not adequately addressed, it is unlikely that such proposals will be well-received,

much less adopted. Every conceivable question that could be asked about a new proposal should be asked and answered long before the proposal is placed before the Council. The following principles are suggested as guidelines to be used when considering a proposal for membership restructuring.

1. The Piano Technicians Guild is an organization for piano technicians. Is PTG really an organization for all individuals with a professional or avocational interest in piano technology, or is it an organization primarily for piano tuner-technicians? Until we answer this question we cannot even think about restructuring (or marketing, or education or much of anything else). The name implies that the Piano Technicians Guild is an organization for those who are involved in piano service.

2. The purpose of creating categories of members is to properly identify the member's relationship to the Guild and its standards. A category title should clearly reflect whether or not the member has met those standards. If standards didn't matter, then membership structure would be of little consequence. But since standards are so very important to the Guild and the fulfillment of its mission, we must be certain that our membership structure is a true reflection of our high standards.

Membership categories should be based on whether or not a member is a qualified piano technician, *as determined by our examinations.* Non-technicians and technicians who will not or cannot become fully qualified by examination should not be placed in the same classification with technicians who are preparing for the RPT exams and are in the process of becoming qualified.

3. Piano Technicians should be classified as those who are qualified for piano service and those who are becoming qualified. The only way PTG has of determining who is and who is not a piano technician is by examination. Associate members might be beginning or advanced students, unqualified or expert technicians, or even non-technicians. Until the RPT exams are taken we simply do not know whether or not a person is qualified to service pianos. An Associate member may claim to be a piano technician, and may be known by other members of the chapter to be a piano technician, but the completion of the examination process is the only way one can be registered as a piano technician in PTG.

4. Qualification examinations for piano service should remain focused in three basic areas: tuning, repairing, and regulating (touch and tone). While rebuilding, refinishing and other specialty services are an important part of the piano service industry, they are by no means necessary to a complete piano service. On the other hand, a piano service business cannot be considered to be complete if any one of the three (tuning, repairing, regulating) are left out. Therefore, our main thrust should remain focused on these three areas.

5. Franchised membership must continue to be based on qualification by examination. The standards of excellence for PTG must always be determined by those who are themselves fully qualified. Those who determine the policy of the Piano Technicians Guild, those who make the decisions and run the organization, must be qualified piano technicians. Having beginning students and non-technicians voting on Guild policy would make about as much sense as having medical students and non-medical personnel setting policy for the American Medical Association. Likewise, those who represent the Piano Technicians Guild as national, regional or chapter officers, or as chair of a PTG or chapter committee, *must* be qualified piano technicians. These persons often represent the membership to the public, and it is vitally important that they not only be qualified to serve as officers, but also be qualified piano technicians.

Throughout the history of PTG, and the history of our two parent organizations as well, franchised membership has been *earned*, not *bought*. To give Associate members the right to vote would be the same as allowing franchised membership to be bought, because by simply paying dues a person could obtain franchised membership. This would not be beneficial to the well-being of PTG.

Conclusion

We have talked about the problems of our membership structure for years. This year, two chapters have made proposals to the Council for bylaws amendments to restructure our membership. The proposals appeared in the May Piano Technicians Journal. As chapters and individual members consider these proposals the following questions, among others, may be helpful:

1. Will the proposal solve the problems of the current membership structure?
2. Will the proposal create new problems?
3. How would the proposal affect each segment of our membership?
4. Is the proposal adequate for the foreseeable future, or will we soon have to face this situation again?
5. If adopted, how would each of the proposed membership structures relate to PTG programs such as marketing, exams, continuing education, teacher relations,

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Continued

etc.

6. What would be the financial impact of each proposal, if adopted?

7. How would each proposal affect your chapter?

8. Are the individual proposals in accord with the mission, objectives and principles of the Piano Technicians Guild?

In our diligence to simplify a complex structure in 1986, did we go too far and oversimplify it? Did we sacrifice some desirable features for the sake of simplification? While the answers to these questions may be debatable, it is very clear that the current membership structure is not completely satisfactory, and it is vital that we settle these internal problems so we can get on to other important matters. But it is also important that we not do it in haste and create yet more problems. Somewhere in all this lies our future membership structure.

[1]*Constitution of the Piano Technicians Guild, Inc., as amended to July 5, 1973.*
[2]*Membership Restructure Committee Report, May 1986.*

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To Associates Preparing For RPT Status

John E. Stebbins, RPT,
Chairman
Examinations and
Test Standards Committee

The Technical Institute is coming to Milwaukee. The greatest benefit to you at any Technical Institute is the wide variety of classes to choose from. For the novice the choice can be bewildering. Most of you preparing for the RPT exams need classes that deal with the basic principles and techniques involved in tuning, repair, and regulation. In the absence of a special curriculum geared to your needs, the Examinations and Test Standards Committee suggests the following classes:

Tuning

Advanced Aural Tuning-*Virgil Smith*
B E T - Basic Elements of Tuning-*Jim Coleman, Sr.*
Historical Temperaments-*Owen Jorgensen*
Partial Hearing: Your Greatest Asset - *Jack Stebbins*
Preparing for the Tuning Exam - *Al Sanderson*
Temperaments of the Masters - *Randy Potter*

Repair

Action Centers: The Secret of Consistent Touch - *Don Mannino*
Double Point - A Different View (Center Pinning) - *Isaac Sadigursky*
Stringing: Tension, Torque, and Tuning Pins- *Joel & Priscilla Rappaport*
Everyday Voicing-*Bob Davis & Dale Erwin*
If Tone - Why Hammers? -*Ari Isaac*
Voicing the Renner Hammer-*Rick Baldassin*

Regulation

Dampers the Yamaha Way-*The Yamaha Team*
Preparing for the Technical Exam - *Mike Carraher*
Reliable Grand Regulation-*Danny Boone*
Turbo-Charging the Vertical Action - *Jack Wyatt*

When you pick up your registration packet, look in the Institute booklet for these classes. Read the class descriptions, and find the classes on the schedule. To get the most out of each class:

- Chart your course of study carefully.
- Know where your next class is.
- Be there early.
- Sit in the front row.

Keep in mind these words attributed to Yogi Berra, "If you don't know where you're going, the chances are you'll end up somewhere else."

DATES & DEADLINES

June 7, 1993
Tuning & Technical Exams
N. California Area Examing Board
Skyline College
Contact: Neil Panton
415-854-8038

June 14, 1993
Deadline for reservations at Hyatt Regency and Marc Plaza Hotel, for the 36th Annual International Convention & Technical Institute

June 18, 1993
Deadline for Convention early registration

June 19, 1993
Tuning Exam—Twin Cities
Contact: Brian Mahaffy
612-374-4368

June 26, 1993
Technical Exam—Twin Cities.
Contact: Brain Mahaffy
612-374-4368

July 5, 1993
July 4th Holiday—Office Closed

July 13-14
PTG Council Meetings
Milwaukee, Wisconsin

July 14-18, 1993
36th International PTG Convention & Technical Institute
Milwaukee, Wisconsin

September 6, 1993
Labor Day Holiday—Office Closed

September 30, 1993
Deadline for return of 1993 Chapter dues collection forms

Marketing Executive Coming To Milwaukee

Keith Bowman, RPT
Marketing Committee Chair

Delegates of last year's Council session in Sacramento will recall the presence of Glenn Schieke, our account executive and vice president of The Phelps Group. His presentation helped to clarify many issues that Council members deliberated on, especially our association logo proposal.

We are pleased to report at this time that Glenn is planning to be in Milwaukee this July, again to facilitate our discussion on marketing and long-range planning. Particular items are the proposed Graphic Standards Manual—the guideline document for member logo use; and our recently completed research project and its impact on relevant decisions Council needs to make.

An additional benefit of Glenn's presence in Milwaukee is his participation in the class, *Marketing With PTG Business Aids.* This is a comprehensive, three-hour class which will offer basic marketing concepts, practical applications for member-business promotion, tips for maximizing the effectiveness of PTG business products, a walk through of the Graphic Standards Manual, and much more. This will be the first time we have had this opportunity for professional participation, an exciting prospect. The class is scheduled for the morning of the first day of the Technical Institute.

Product News

Technical Bulletin #6, *Rebuilding/Reconditioning,* is in final development stage and should be in print by mid-June. Committee member Bill Spurlock has prepared an article describing the bulletin in detail and how to best use it, which will run in a subsequent issue of the Journal.

Reminder Cards are finally in print and available for purchase. There are six graphic designs, with two text versions for each one, to allow insertion of either last date serviced or number of months expired since last service. Please refer to the advertisements on pages 33, 35, 37, 39, 41, & 43, as well as the order form on page 49 of this issue.

MARKETING

PTG

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Membership Status

Northeast Region	829
Northeast RPTs	518
Southeast Region	619
Southeast RPTs	382
South Central Region	298
South Central RPTs	196
Central East Region	605
Central East RPTs	383
Central West Region	374
Central West RPTs	246
Western Region	618
Western RPTs	376
Pacific NW Region	380
Pacific NW RPTs	229
Total Membership	3,723
Total RPTs	2,330

Chapter Mentorship Program Offers Support To Associates

Jeannie Grassi, RPT
Seattle Chapter

Sometimes the simplest of ideas are the best ones. The Puget Sound Chapter has embraced a very simple idea suggested by Isaac Sadigursky at a recent visit to the Seattle Chapter's All Day Seminar. Isaac recognizes the resources that dwell in the ranks of an organization like PTG. Chapters all over the country have a wealth of knowledge that exists deeper than what comes across in a technical program at a meeting or conference. Our wealth is in our network of people, not necessarily formal instructors, but experts in their field nonetheless.

Isaac threw out several suggestions for promoting communication within PTG and improving our skills at the same time. Mitch Kiel, President of the Puget Sound Chapter, was in attendance that day and one particular idea of Isaac's grabbed his attention and he immediately envisioned it working in his own chapter. Isaac proposed to simply pair up Associates with RPTs for one day — a sort of mentorship program. The method of pairing could be an observer of an RPT during his/her daily routine. If the RPT is more shop oriented, this could mean assisting with some sort of chore in exchange for learning a new skill.

Often Associate members in our chapter feel left out and isolated. There may not be anyone interested in taking on the responsibility of a student or apprentice, but sharing a day is not going to be too much of a drain on anyone. The Associate can see client/tech relationships, off the cuff decisions, dealer relations, shop techniques/set-up and much, much more.

Many RPTs may not feel particularly adept at teaching or lecturing in front of a group, but would welcome sharing informa-

tion in one-on-one contact occasionally. And as anyone who has taught knows, the RPT stands to learn also, merely by being in the position of observing and evaluating his/her own methods and techniques.

Mitch sees the ramifications of this concept: "If the chapter's RPTs adopt this outlook of support to our Associates, there can also be quick one or two hour get-togethers to discuss unisons, hammer technique, rebushing, etc. Traditionally, Associates hook up with one single RPT via an apprenticeship. Any extra learning usually occurs at chapter meetings or reading the *Journal*. Isaac's idea fills the huge gap between monogamy and self-instruction."

A modification of this idea could involve RPTs volunteering to be 'on call' to answer phone calls from Associates when they don't know where to turn. Sometimes it's not clear who to call for a friendly, helpful response. A simple telephone list of RPTs willing to participate could be made available to all Associates when they join the chapter.

For a minimum of involvement, a great deal can be offered by an RPT. And by merely watching and listening, an Associate can gain insight into many of the more subtle aspects of our business, not necessarily gained by reading or attending classes. So simple — such a good idea!

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THE SOUND BOARD

Greg Boyd, RPT
Royal Oak Michigan

What good is marketing going to do for those members (now annually increasing toward a majority) who are not willing or able to take our standard exams? Sure, brochures on what the Guild is and how often a piano needs tuning should be upgraded, but brochures on voicing and other highly skilled tasks are unnecessary for those who have the skills, and potentially problematic for those who don't.. (i.e. If these brochures recommend that an RPT do the work, then why would a non-RPT hand one out to his or her customer?)

Yes, this new marketing will serve those who are already doing well, but does it serve the needs of the majority of our members, be they vocal or silent?

I maintain that the marketing goes too far in its approach, beyond just the public exposition of our organization. Education, resulting in upgrading, is where our money should go.

At Your SERVICE

Colette Collier, RPT
Chapter Services Committee Chair

Remember when you were little, and you got on your mother's nerves? She probably said: "It's a nice day; why don't you go play outside?" Several chapters have been taking advantage of springtime to go play outside, making field trips to a variety of different locations. After a winter of being mostly indoors for meetings, many members find that a change of scenery is just what the doctor ordered. Field trips often provide chapter members the opportunity to see places they might not otherwise see. Sometimes they are designed to study peripheral aspects of piano technology: trips to supporting manufacturers, historic locations, supply houses, etc. With the changes in the face of American manufacturing, it's a good idea not to put these trips off.

Several years ago, the DC Chapter had made plans to take a trip to the Moeller Organ Factory in Hagerstown, MD. There was a strike, and the trip never quite got rescheduled. Last year, the factory closed its doors for good, and the old fixtures, workbenches, tools and other good stuff were all auctioned off. So, why don't you go outside and play? It might provide a great opportunity for the younger members of your chapter to interact with the older members. A change of scenery might bring some new energy into your business meeting. Here are some trips planned for Spring '93:
BALTIMORE: The Baltimore Chapter journeyed to New York to visit the Steinway factory. Drawbacks include New York traffic jams in the early morning, and the irreverent hour that most bus trips depart. On the positive side is a

wonderful tour of the world famous factory.

ATLANTA: The Atlanta Chapter visited the Piano Gallery to see and feel the new Boston piano. The visit was hosted by Andy Williamson.

COLUMBUS: The Columbus Chapter had a trip planned to the O.S. Kelley factory in Springfield, OH to see piano plates being made. Transportation was being arranged by car pool.

ST. LOUIS: The St. Louis Chapter was working on two possible field trips: to the Baldwin factory in Truman, AR and/or the Charles Walter factory in Indiana.

WASHINGTON, DC: The Washington, DC Chapter planned a trip to the harpsichord/pianoforte building establishment of Tom & Barbara Wolf in Virginia.

One idea I have always wanted to implement is to go to one of the many marvelous outdoor amphitheaters. (In our area, Wolf Trap is the best known, but there are so many all over the country). Perhaps it could be a family affair. I'd always thought it would be nice to arrive in the early afternoon, have a technical session on the special problems keeping pianos in shape outdoors, or perhaps a tour of the facility. Have a picnic supper, and stay for a concert that evening. So, why not go outside and play for awhile?

Associates Day In The Puget Sound Chapter

Mitch Keil

On October 31, 1992, the Puget Sound Chapter, in partnership with the Seattle Chapter, premiered Associates Day at the University of Puget Sound in Tacoma, Washington. Future Associates Days will precede the semi-annual RPT exams given alternately at the Seattle and Puget Sound testing centers.

The event was a five hour introduction to PTG's technical and tuning exams for aspiring Registered Piano Technicians. Ten Associates, one RPT, and two non-members attended, representing a wide range of experience. The technical exam was discussed by Seattle member Randy Rush, RPT, and the tuning exam was discussed by Puget Sound member Jim Snyder, CTE.

To introduce the technical exam, Randy showed the same action models and test jigs used during exams, and then discussed the regulation and repair abilities that will be tested. Tools needed were mentioned. Some skills, such as string splicing, were demonstrated. Jim talked about the tuning exam process, with emphasis on grading parameters. After setting an aural temperament, Jim measured samples of passing and failing intervals at many areas of the keyboard.

"Hey, the exam's not as scary as I thought. I can do that," said Puget Sound Chapter Associate Ryan Sower afterwards. The first Associates Day was successful in deflating the mystery of the exams, and helping people learn what skills the exams will require. Nervousness while taking the RPT exams is a major obstacle to success. Familiarity with the exam process as well as the actual types of questions can only increase the likelihood of passing, as well as give the Associate a realistic appraisal of his or her current skill level.

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An Open Letter To PTG President Fern Henry

The following was submitted to be presented as an open letter to PTG President, Fern Henry.

Dear Fern,

Although the Reno, Nevada, Chapter is small, we are very appreciative of your tenacity, steadfastness, and foresight into the future of PTG. Your diligence in wanting to present PTG to the public as a professional organization of qualified technicians has earned unanimous appreciation in our chapter. The everyday activities involved with being our president must give a whole new meaning to the word "stress", and the Reno, Nevada, Chapter sends you a big bear hug and a heartfelt thank you!

Sincerely Submitted,

Ray Diederichsen
Secretary-Treasurer
Reno, Nevada Chapter

In Memory

Charles Sherwood, RPT
August 11, 1924
April 15, 1993

On April 15th, Charles Sherwood passed away after a long struggle with cancer. Chuck was born in Breedsville, Michigan on August 11, 1924. Chuck moved around several times because his father was in the Navy, so he ended up graduating in Chicago.

Chuck joined the Navy in 1943 and received his discharge in 1946. He then went to work at Everett Piano and was paid by the government to train ex-servicemen in a trade so they could make a living. Chuck learned tuning, stringing, and action work while at Everett Piano. He stayed until late 1947, then moved to Battle Creek to work at Grinnell Brothers for six years and went independent in June of 1955.

Chuck joined the ASPT Association in 1950, but he was at large and finally lost interest and dropped out. He joined our chapter of PTG in 1976.

Chuck is survived by his wife Dorothy, six children and many grandchildren. His hobby was UFOs and he could talk on the subject for hours. Chuck will be missed by his fellow technicians.

Harry Buyce, RPT
Western Michigan Chapter

The following corrections should be made to the 1993 edition of the PTG Membership Directory.

On page 12, the 1991 recipient of the Golden Hammer Award, was incorrectly identified as Richard Bittner. The winner of that award was Richard Bittinger. We extend our most sincere apologies to both Mr. Bittinger and Mr. Bittner for this oversight.

CATEGORY
Godfriaux, Stan R.
2201 Post Road, #101
Madison, WI 53713
608-221-1102
Chapter 537
Category 1

PHONE
Amihud, Dan D.
1244 Brookview Avenue
Westlake Village, CA 91361
805-373-5154
Chapter 901
Category 1

OMITTED
Alexander, Steve A.
315 N. Missouri
Mexico, MO 65265
314-581-3636
Chapter 653
Category 4

Daytona Beach Chapter Hosts Successful Florida State Conference & Seminar

Daytona Beach PTG Chapter #320 recently hosted a very successful two-day Florida State Conference and Seminar.

Classes given covered: Concert Tuning & Preparation/ Kent Webb; Soundboard Installation/Tony Geers; Piano Service In The Home/Tyrrell Pearson; Performing Art of Tuning/John Phillips; Maximum Efficiency for Craftsmen/Skip Becker; Dampp-Chaser Electronics/Steve Smith; Voicing/ Scott Jones; Piano Actions/Rick Baldassin; After Touch/LaRoy Edwards; Grand Piano Regulation/Gina Carter; Preparing For TheTechnical Exam/Fern Henry; Mason & Hamlin—The Old and The New/Bruce Clark/ Paul Monachino/Lloyd Meyer; and a class by Del Fandrich.

In addition, there was a special class held Monday morning on Polishing and Refinishing Pianos at Community Piano, Inc., given by Walter Pearson and his staff.

Exhibitors present were: Wurlitzer; Mason & Hamlin; Yamaha; Young Chang; Renner and Dampp-Chaser Electroncis.

There were 84 registrants and over 100 in attendance at the Saturday night banquet, presided over by state president, Tom Servinsky.

A great big "thank you" to all instructors, exhibitors and those firms that donated prizes which were Schaff Piano Supply Company, American Piano Supply, Pin Tightener and Dampp-Chaser. Also, to Robert Carr, Editor of the Floriday State Newsletter, and to Skip Becker, Northeast Floriday Chapter President, for their assistance.

The state was doubly honored by the presence of President Fern Henry and SERVP, Gina Carter who each spoke briefly at the banquet.

Walter Pearson was surprised by being presented the Edwin Wood Man-Of-Note Award for his contribution to the State of Florida PTG. One of his achievements was that of having been the Director for nine successful Florida State Conferences.

New officers elected were: Bob Mishkin/President; John Ragusa/Vice President. Re-elected Secretary-Treasurer was John Phillips.

The Southwest Florida Chapter was the successful bidder for the 1994 Conference and Seminar.

After the business meeting Walter and Helen Pearson entertained the instructors and officers at a reception at their home.

Helen Pearson