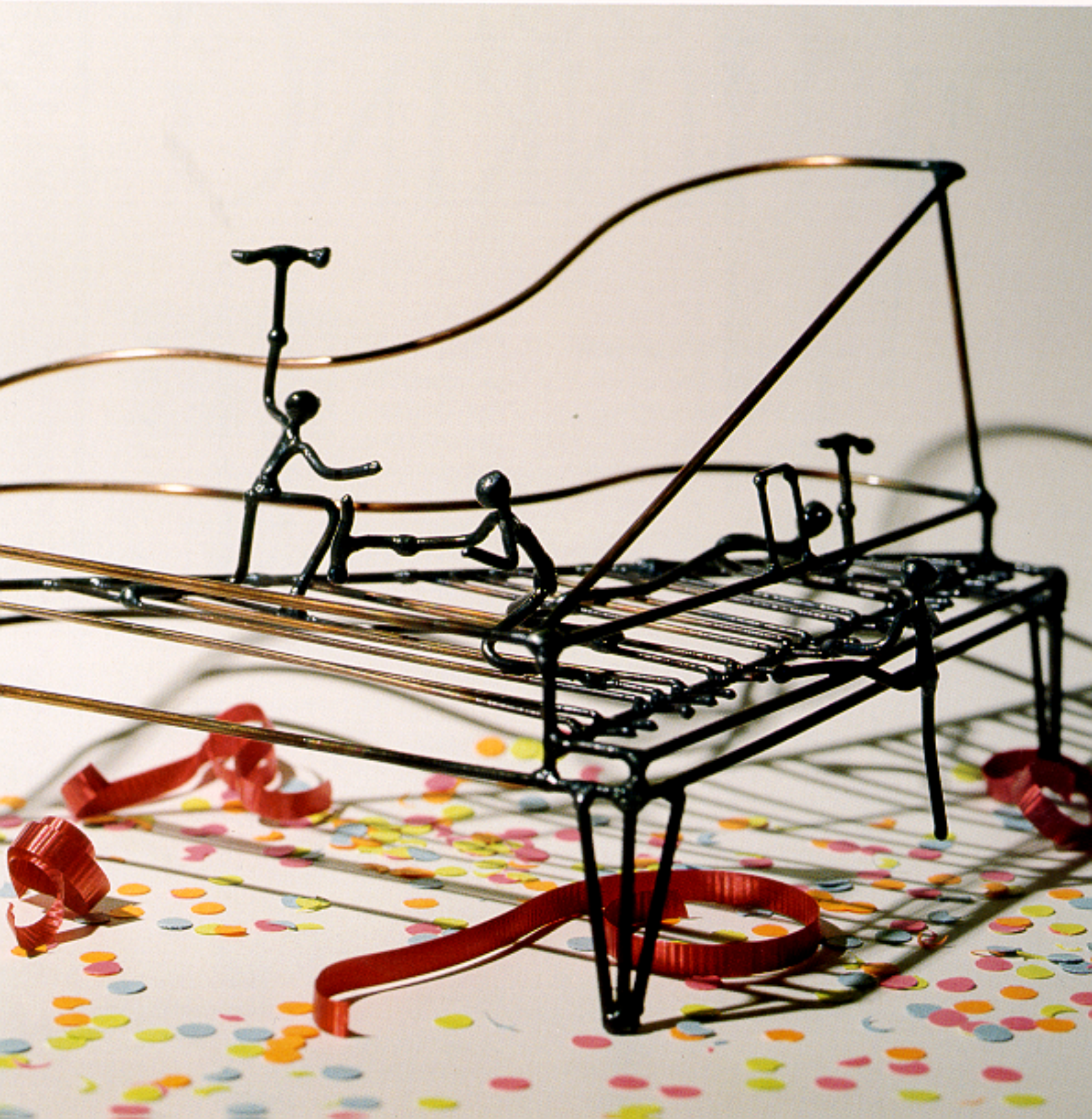
PIANO TECHNICIANS
# Journal
*Official Publication of Piano Technicians Guild*

July 1994 Vol. 37 • #7



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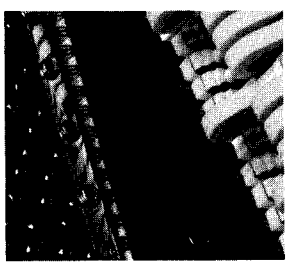

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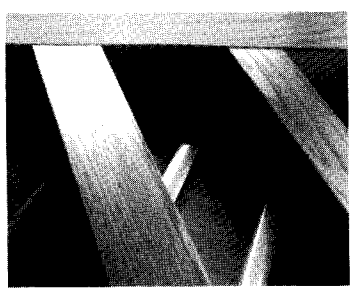
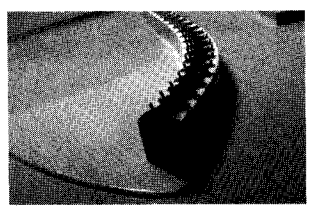


ALL SOUND DECISIONS. THE KIND CRAFTSMEN LIKE YOU UNDERSTAND AND APPRECIATE.



PUTTING THE SOUND FIRST IS A TRADITION WE'VE HONORED FOR OVER 135 YEARS. IN FACT, THE REASON THE "T" IN OUR NAME STANDS OUT IS TO REMIND US EVERY DAY JUST HOW IMPORTANT TONE IS.

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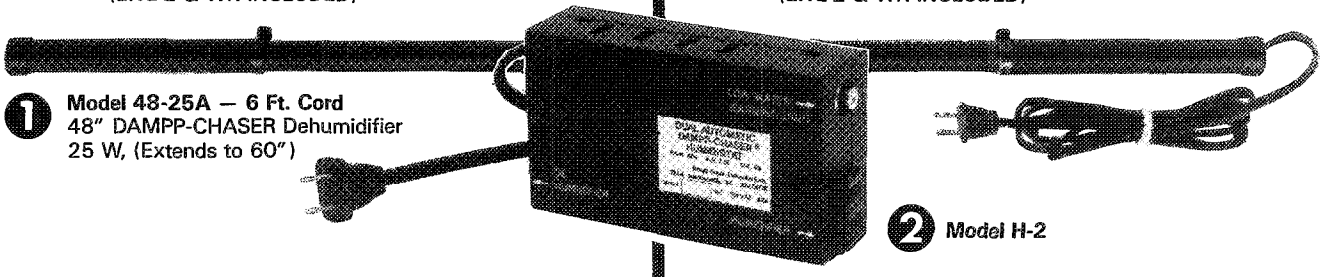

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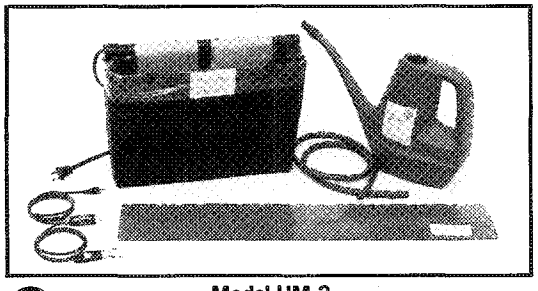
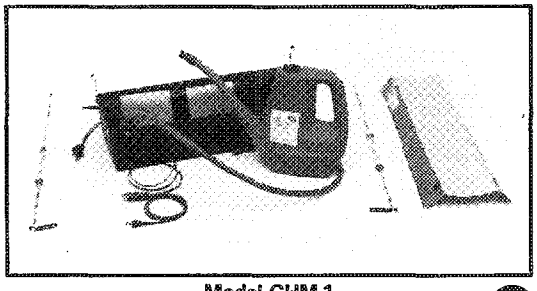


3 **Model HM-2**



**Model GHM-1** 3

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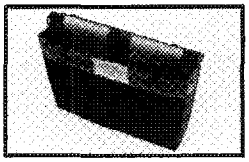

**Model HM-1ST**
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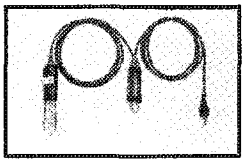

**Model LWL-2**
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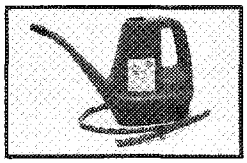

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PIANO TECHNICIANS
# Journal
*Official Publication of Piano Technicians Guild*

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**Editorial**
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## Editorial Perspective

# *Is the "Good Service" Responsibility A Part Of Your Plan?*

Recently, I was engaged in rivoting conversation with a friend about the subject of quality service, or more importantly, the lack thereof. The topic appeared as she began to unfold a horifying story about a recliner chair her husband had purchased for her for Mother's day. The chair, now barely a month old, was a wreck. The foam in the seat cushion had already buckeled, creating a huge lump in the center of the chair.

My simple question, "Why don't you just send it back," opened the flood-gate. It seems that she had called the store (who shall remain unnamed) where the purchase had been made. She asked the customer service representative (CSR) to enter whatever job ticket was necessary in order to get someone to her house to pick up this obviously poor-quality chair. The CSR on the other end of the line stated, "Oh no! I can't do that. It is the policy of the store to send out a repairman to try to fix the chair before we will accept a return." In the frustration of it all, my friend said, "OK, send someone soon," and hung up the phone.

Several days later a repairman from the store showed up at her door, came in to the living room where the chair sat, looked briefly at the problem and said, "I can fix that. I'll be back for the chair in two weeks." He then turned around and left.

Three weeks later, my friend once again called the store and demanded an explanation. As the CSR pulled up the account from the computer, she was told that the "repairman had returned to her house two weeks ago and the chair was now in the shop being repaired."

"How interesting," stated my friend, "since I'm standing in my living room looking at it!"

This seems to be the way of service these days. Businesses are being run by representatives who have little care for making sure the customer is happy, or for making sure the products they are delivering are good.

Where do you get your information? Do you rely on the Journal and the Guild, or do you reach out for other sources as well? Do you share the information you have with others—or ask questions of others in an attempt to uncover a better way of doing business?

This month's Executive Director's Report proposes that it is the responsibility of the Journal to bring you, the technician, new information, and that it is in turn, your responsibility to analyze that information. For you, the business owner, it is more important than ever to make sure that the information you find is an appropriate answer for the tasks you are undertaking. Satisfied customers are your greatest asset.

The Piano Technicians Guild offers a unique opportunity to its members. There are nearly 4,000 resources available to each member in this organization, not to mention the vast amount of educational opportunities and materials being offered through books and training materials. But these resources are only as good as those who are willing to use them, challenge them, analyze them and participate in their creation.

With the new format of the Journal, these opportunities are opened even further to each of you who read it every month. Departments such as "Q & A" and "Tips, Tools & Techniques" offer an unlimited forum for the exchange of ideas that work, and sometimes just as importantly, those that don't work. Don't be afraid to ask questions of your peers. Send in your thoughts to us. We can only publish the thoughts, ideas, concerns and quieries which are made known to us. The pages of the Journal start out blank every month...and while it is our job to see that they are filled, it becomes our "good service" responsibilty to you, the reader, to see that they are filled with useful and constructive information.

Perhaps your first step in making sure you have satisfied customers is to make sure you follow through on your "good service" responsibility to constantly strive for better understanding and knowledge of the piano technology industry. Submit your questions, ideas, and experiences to the Journal. In the words of a certain contest broker..."Go ahead. Send it in." Your input is important to the success of the Journal and *is* the first step toward acheiveing your "good service" responsibility.

*Jami Henry*

*Editorial Note: We encourage your opinions, comments, notes, letters and/or questions. Please submit them to: PTG Home Office, 3930 Washington, Kansas City, Missouri 64111-2963.*

PIANO TECHNICIANS
# Journal
Volume 37 • Number 7 • July 1994





## DEPARTMENTS



## COVER ART

*"How a Piano Really Works," a welded-wire sculpture by Glenn Donovan, answers some basic questions for all of us. His biography doesn't mention a background in piano technology.. "My father had a torch and my mother had an idea," he said of his introduction to sculpture. For more information about Donovan's quirky creations, contact him at Rt. 1, Box 21B, Ferryville, WI 54628, or call (608) 734-3223.*

# A VALEDICTORY MESSAGE

As I write this, my last President's Message, I look back upon my five years on the Board with great satisfaction. During this time, we have devoted considerable energy to the goals set forth in our Mission Statement. Our professionally designed marketing program has delivered high quality business aids to benefit members and the tools we've long needed to create an effective public image for PTG. We've managed to adopt a single, recognizable name for franchised members, and have committed new energy to educational programs to not only encourage upgrading but to benefit all members and the industry. By looking outward and acknowledging our role in the industry, we have laid the groundwork for PTG to become a more effective partner to piano manufacturers, teachers and dealers.

Our strength, as always, has come from within: our members are highly committed to the organization and stay actively involved at all levels. However, as we have matured together as a professional association, we have begun to realize our responsibility and our potential as full partners in the piano industry. Our industry is facing serious challenges now, but PTG has the opportunity and the ability to grow even stronger. To do so, we must maintain an outward view, keep the best interests of our members and industry in mind, and further develop programs that give PTG members—and their clients—the edge.

We need to view PTG itself as a business and take a professional approach to defining and meeting the needs of our clients: the members. In order to begin relevant long range planning, membership characteristics and needs were surveyed in January 1993; this provided a solid base for planning. Over 40% of the membership responded to the survey and the data has been most helpful in evaluating current programs and designing new ones. This initial survey also gave us a baseline reading of member opinions that will be useful to compare future surveys against, and thereby measure the effectiveness of our programs.

To ensure that our Annual Institute best meets members' needs, we surveyed attendees' opinions of classes at last year's Institute in Milwaukee. This was the first time in many years that members have been asked to rate classes and instructors, and the results are directly reflected in the high number of new and innovative classes seen in this year's Institute. Constant innovation is necessary here to assure that our Annual Institute competes successfully with the regional and state seminars for attendance and stays in the forefront of technology and teaching methods.

Our Journal has also entered a new phase, with a more modern format and more access for direct member participation through the Letters, Tips, Q&A, and Reviews departments. Arguably our most valued member benefit, the new Journal should prove more relevant than ever in serving our members' needs. As the Board seeks the next Journal Editor, the primary goal will be to find a person with a vision of the members' varied interests and desires, and a passion for innovation in meeting readers' expanding needs.

We have always considered our RPT examination vital to our mission. In recent years, members have expressed concern over the declining percentage of RPTs, and have debated the causes of this trend. It is important to note that during the 1980's we made our exams much more rigorous and began to charge exam fees, but waited until 1993 to introduce comprehensive exam study guides. The exams became more standardized and objective, but were also viewed as harder and hence more intimidating. In hindsight, we should have introduced resources for examinees concurrently with the new exams. While the increasing percentage of Associate members is reason for concern, it has provided motivation and the opportunity to develop solutions that will enhance PTG for all members. Two such solutions are the Tuning and Technical Exam Source Books, and the PACE Program. The Source Books have proven invaluable to those preparing to challenge the RPT exam, while also popular with RPTs wanting a permanent reference on essential skills. This month we will complete the exam source series by debuting a written exam study guide. Thus, all exam information will finally be available in one place.

The PACE program has been enthusiastically embraced by the membership and PACE Lesson plans are now a regular Journal department. This program emphasizes the importance of hands-on training of technicians, to foster skill as well as knowledge. Mentoring at the local level is actively encouraged by providing lesson plans for chapters and individual RPTs to use in tutoring. As the health of the local PTG chapter is vital, the PACE program aims to provide chapters with tools they can use to strengthen their local membership.

PTG has moved aggressively to enhance the profession of the piano technician in the eyes of our clients and specifically to promote PTG as setting the standard in piano service.

*Continued—page 8*

# KAWAI...

*The Choice of Those Who Know.*

Symphonies, operas, music halls, festivals, artists and celebrities put their trust in **KAWAI**. The world's foremost pianist, Martha Argerich, performs on a **KAWAI**. Whether it's the *Aspen Music Festival, San Francisco Opera* or International Piano Competitions such as the *Frederic Chopin International,* Warsaw, Poland; *Arthur Rubinstein International,* Jerusalem/Tel-Aviv, Israel; *The International Music Competition of Japan*, Tokyo, Japan; *Sydney International,* Sydney, Australia; *Dublin International*, Dublin, Ireland; *International Pianoforte,*Cologne, Germany; *International Piano Competition "F Busoni"*, Bolzano, Italy; *Concours International "Vienna Da Motta"* Lisbon, Portugal;*Gina Bauchauer International Piano Competition,* Salt Lake City Utah; Santander International Piano Competition, Santander, Spain; Munich International Music Concour, Munich, Germany; *"George Enesco" International Piano Competition,* Bucharest, Romania; *The International Piano Competition of Taipei,* Taipei, Taiwan; *Hamamatsu International Competition,* Shizuoka, Japan, there is a **KAWAI** on center stage . . . also the winner of the prestigious *Van Cliburn Competition* won with **KAWAI**, not to mention Pop Artists and there even is a **KAWAI** In Chopin's Birthplace in Poland. **KAWAI** is the choice of the world's foremost pianists.Play **KAWAI...** play the best you can play.

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## *A Valedictory Message—continued from page 6*

*Fern Henry, RPT*

Our new marketing materials are designed as tools for individual technicians to use in promoting quality piano care while highlighting RPTs as providers of that care. Member usage of these new business aids is very strong, as are members' reports of positive customer responses.

Likewise, our relationship to the piano industry has improved in recent years. When PMAI and NPF inaugurated the SPELLS program, aimed at educating the public about the benefits of piano participation, PTG emerged as an enthusiastic partner. Chapters and individual members all over the nation have provided leadership in cooperating with dealers and teachers to reach the unconverted with the message that playing the piano can enrich one's life. Our efforts at industry cooperation and in promoting professionalism within our membership have garnered much positive comment from our industry colleagues. We have gained increased respect and have the opportunity to build upon our success in the future.

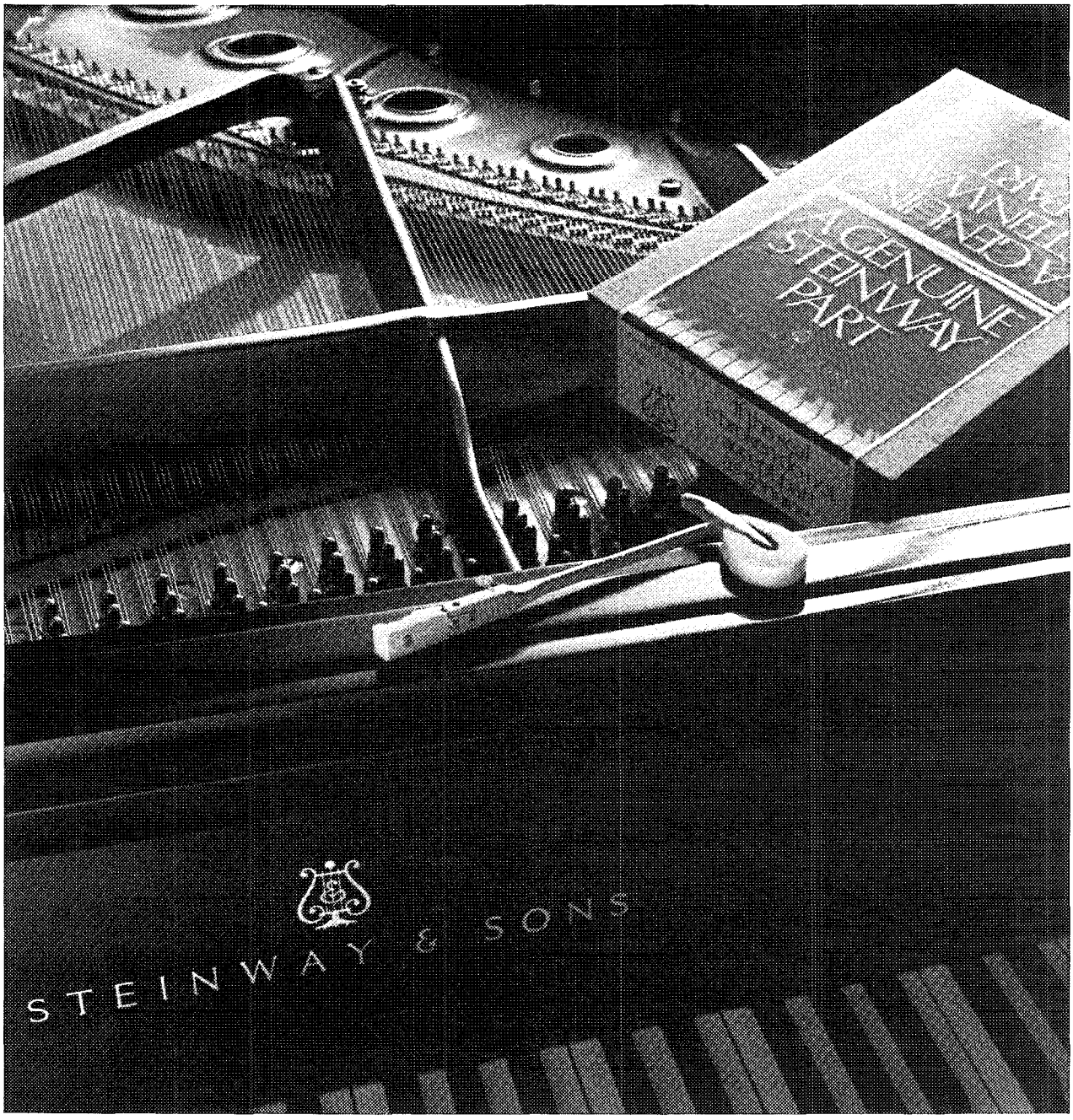
Our current economy and the decline in monies spent on music in our society will continue to affect us all. The piano manufacturers are experiencing steadily declining sales and are reducing funding for technical support. If this continues, the consequences for our educational programs could be serious. Historically, manufacturers have generously subsidized our seminars and conventions. Now we must look ahead and anticipate potential changes so we can adapt educational programs to a lower level of industry support. Also, as school systems cut funding for music education, private piano teachers are assuming a larger role; our relationship to them is more important than ever. The welfare of piano technology schools needs to be our concern as well. Change in all these areas is on the horizon. However, change is not necessarily bad, for it also presents new opportunities. We can best face tomorrow's uncertain environment by finding and pursuing the opportunities inherent in changing conditions.

Accordingly, the 1993 Council recognized the need for a strong emphasis on education in PTG and approved the appointment of a Special Panel on Educational Goals. The Panel was charged with studying all our educational offerings and suggesting improvements. This very act was significant, because as a business we should constantly review all programs. We must use our time and money wisely as we seek to serve our current members and attract new ones. The work of the Panel has helped lay the foundation for prudent educational planning by Council.

I note with pleasure the growing sophistication of the chapters, the Council and the Board in considering policy issues in PTG. Over time, we have progressed in our ability to see ourselves as part of the piano industry, rather than separate from it. Council has begun to move away from a narrow focus on isolated details and issues, recognizing that random action does not always move us efficiently in the direction we want to go. Our future success in reaching our potential as a professional organization rests upon our growing ability to look at the big picture: to envision our goals, state them clearly, choose strategies, then go for it.

On a personal note, I want to express my sincere thanks to the membership for the opportunity to serve. PTG has been my teacher, my school; through this organization I have learned volumes about piano technology and have established myself in a career that I enjoy thoroughly. By serving the organization, I seek, as so many of you do also, to strengthen and contribute to both the present and the future of the profession. I am grateful for all I have learned and will learn about pianos, business, human endeavor, and friendship in PTG. And if my work can contribute in any way to the education of others, I will be proud to know my debt has been somewhat repaid.

# STEINWAY

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# Mousetraps Are Us...*What Do You Think?*

Harmony is not always a desirable goal.

If you talk to 50 piano technicians, you'll probably find that they have only one thing in common — piano technology. Propose any piano-related task, and you'll sometimes find 50 different ways of doing it. That's one of PTG's strengths: association with peers provides an opportunity to explore new techniques and learn from others' experiences.

**Executive Director**
*Larry Goldsmith*

So what's the Journal's role in all of this? Should we publish only generally accepted techniques? Talk about tools that everyone already uses? Should we, from fear that an entry-level member will try something inappropriate or beyond his capabilities, stay constantly on the beaten path?

There's merit to that concept. After all, we're not exactly making this up as we go along. In this organization, we have access to centuries of experience, and you could reasonably say that there really aren't any new problems. Thousands of technicians have probably already faced any situation that might arise. Is there one best way to perform a given task? Quite possibly there is one way that's simpler and more efficient, so there's no point in exploring further.

If you follow that reasoning to its logical extreme, however, there's no reason to keep publishing new material at all. In one form or another, there has been a Journal for some 90 years. Let's just bundle up everything we've already printed and turn it into a textbook (We're actually doing some of that now, but that's a different column). If there really is nothing new under the sun, why are we spending the money to print the same old thing, said a different way by a different person?

That's ridiculous, of course. There certainly are new techniques. Even though the basic technology in which a hammer strikes a string to produce sound hasn't changed much over the years, there have been many new developments that affect the way work is done. And most piano technicians are world-class tinkerers, so there are better mousetraps being built every day. The problem is, we have to strain that new information through the filter of our previous knowledge and experience. That's called critical thinking.

Just as the Journal has the responsibility to bring you new information, you as a reader have the responsibility to subject that information to critical analysis. You have to find the tools and techniques that work best for you. Above all, you have the responsibility to know your limitations where a customer's instrument is concerned — to question, research, experiment and rehearse.

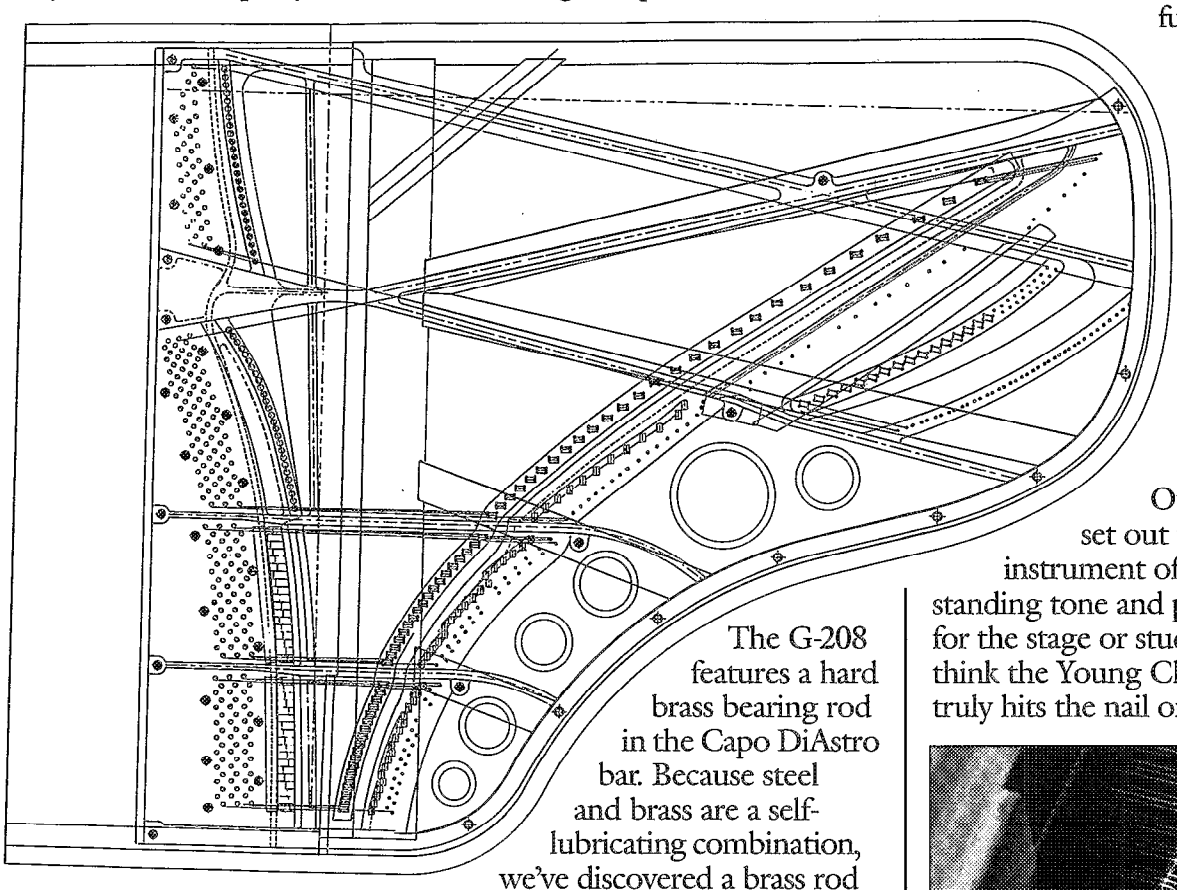
You may not agree with everything we print. If you do, we're probably not doing our job. It's okay to question, and if you disagree, it's okay to send us a letter stating your point of view. In fact, we hope you will — just make it as concise and focused as possible.

So we'll keep bringing you mousetraps. Your job is to decide whether they're really better.

# 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.



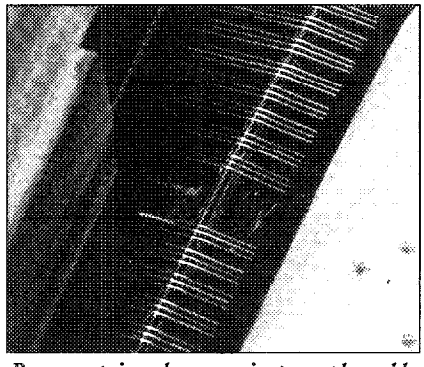
The G-208 features a hard brass bearing rod in the Capo DiAstro bar. Because steel and brass are a self-lubricating combination, we've discovered a brass rod offers better control of strings during tuning. In addition, the brass rod is easily replaced later in the life of the instrument eliminating the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

I have been a Guild member for a couple of years and have PTG Journals back to 1976. Most of your articles on theory are way above my head and I'd venture to say above the heads of many members. Why can't you write something that your mother, brother, uncle or the 6th grader next door could read and understand. I feel like I have a rich feast set before me and I have the flu and can't eat it. What I am saying in a nutshell is write your theory articles and others on a real basic or simple level. The brains out in the audience may laugh at this but why should they alone have a monopoly on the knowledge? KISS system works for me (Keep It Simple Simon).

*Sincerely,*
*Francis Elmer*

### The Moor Is Not A Moor...?

The April Journal arrived yesterday, even later than usual. Somehow, Clifton seems to be on the last stop for delivery of PTG Journals for as long as I have been on the mailing list, about 35 years. However, that is not what I am writing about.

On page 57, under the caption "Foundation Spotlight" there is an item about the MOOR Double keyboard. Above the article is an instrument with a double keyboard which I assume is supposed to be a MOOR Piano. It looks to me more like a Harpsichord, or a very early piano with a double keyboard. It is not a MOOR instrument. Please check with the enclosed photograph.


The MOOR piano was invented and developed in the 1920's. The keyboards were offset, one being tuned an octave higher than the other. Pierce Piano Atlas in a one line entry under Moor, Emanuel, states "Moor double keyboard piano made by Pleyel France."

The "Concise Oxford Dictionary of Music" lists: Emanuel Moor, b. 1863-d. 1931. He is described as a composer who also invented a "Duplex-Coupler" in 1921 with two keyboards tuned an octave apart. David S. Grover's book "The Piano, Its Story from Zither to Grand" on page 164 states that a number of the instruments were made in London by the Aeolian Co. where that American company had established a factory. It concludes its item by stating that interest in it was short-lived. Laurance M. Nadler's book, "The Modern Piano" page 183, goes into greater detail including an illustration of the hands of a performer at the keyboard. Also mentioned are the patent numbers: 161, 549 and 180633 and the fact that a number of instruments were made by the Aeolian Company at Hayes (England).

In searching these references additional material concerning unusual keyboard systems was uncovered. The most unusual and seemingly the most remembered was the Janko-Perrzina keyboard which consisted of six tiers one above the other. It was designed so that tenths and twelfths could be produced with ease, the finger reaching up or down to the range above or below the notes along which the hand was traveling.

For additional information about innovative and unusual keyboards I suggest you contact Thomas S. Reed, RPT, 701 East Patterson, Kirksville, MO 63501. Tom was the editor of the former "Musical Six-Six Newsletter."

*Sincerely yours,*
*Charles P. Huether, RPT*

### The Left-Handed Conclusion Is Wrong...

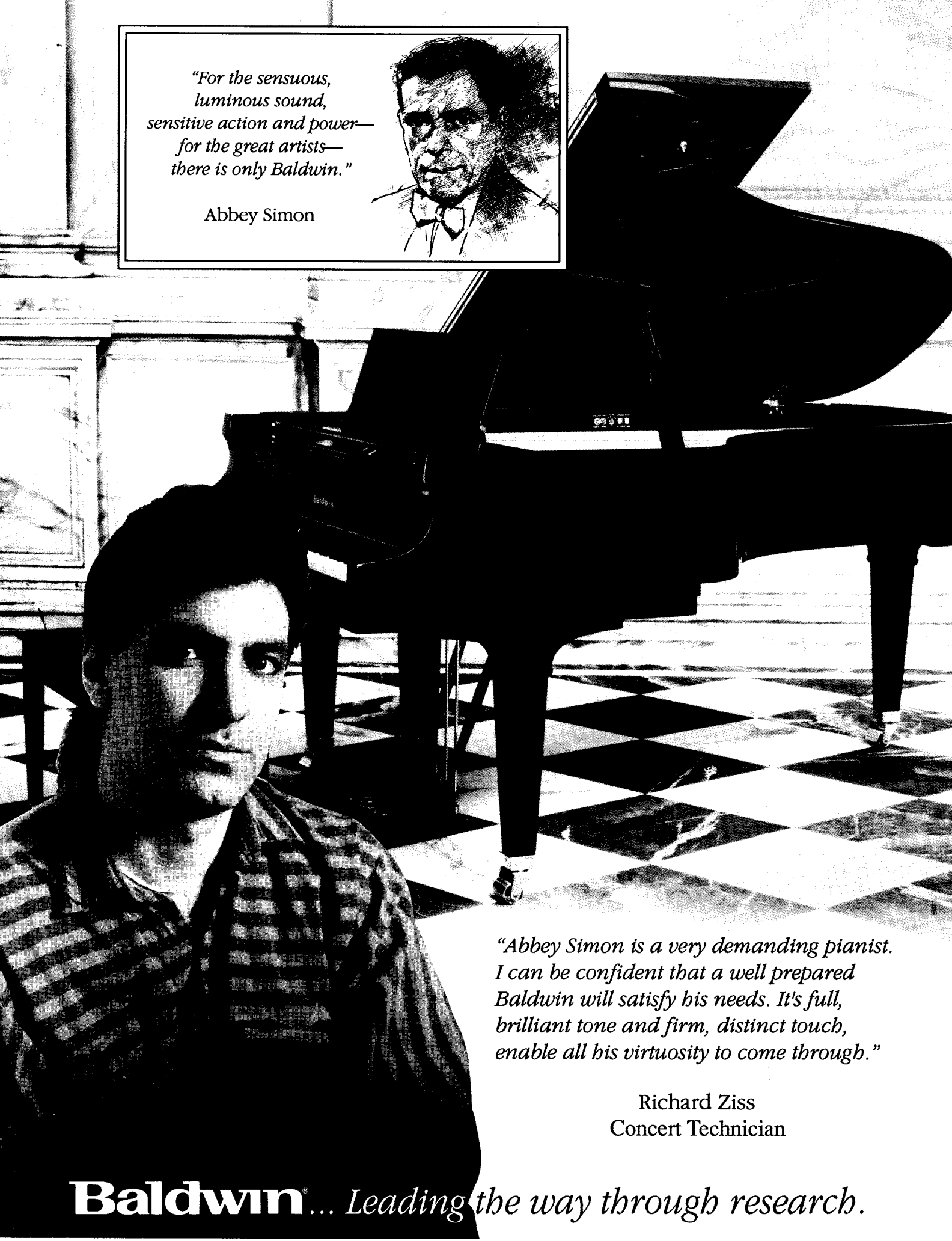
Dear Mr. Day,

Just in case Samick U.S.A. hasn't responded yet to your "whimsical note" in the April issue of the *Journal* (Technical Forum), I am sending you the enclosed picture from the Samick corporate brochure. This enlarged color picture, identical to the smaller black and white insert in the full page ad appearing in the Journal for some time, clearly shows the piano in question to be the more common 'right-handed' model.

Unless I am mistaken, I think Jim Harvey incorrectly assumed that you were referring to the picture of bridge notching on an upright piano in the same ad. In any case, the perspective in both of these small photographs could, at first glance, cause one to jump to a 'left-handed' conclusion. It's my pleasure to set the record straight.

*Yours truly,*
*R.R. Loewen Distributors LTD.*
*Stan M. Kroeker, RPT*
*Piano Service Manager*

*Letters continue on page 14*



*"For the sensuous, luminous sound, sensitive action and power— for the great artists— there is only Baldwin."*

Abbey Simon

*"Abbey Simon is a very demanding pianist. I can be confident that a well prepared Baldwin will satisfy his needs. It's full, brilliant tone and firm, distinct touch, enable all his virtuosity to come through."*

Richard Ziss
Concert Technician

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

### Journal Changes Create Questions...

Change is not always for the better. I don't like the *Journal* in glossy paper. It doesn't look classier, it's more expensive and paper made this way is more toxic to the environment.

*Kent Gallaway*

*Editorial Response:*

We appreciate feedback, Kent, even when it's not positive. In designing the new format for the *Journal*, we considered many factors: price, aesthetics, durability, and even the environment.

At the time we implemented the new format, we began working with a new printer, one who specializes in short-run publications such as ours. Because the new printer produces more than 200 titles such as ours, they save by buying paper stock in large quantities. They also have the equipment to purchase paper in large rolls and sheet it themselves, rather than buying more expensive cut sheets. This is a "house stock," one used by many of the periodicals they produce, so it is actually less expensive for us than the old matte stock previously used—which wasn't that cheap, either. The new paper is also lighter—the May Journal weighed 7.6 ounces as opposed to 9.1 ounces for a previous issue with the same number of pages. When you mail 4,000 copies per month, and your postage costs are computed by weight, that adds up fast. Although it's true that, generally speaking, coated papers are less environmentally friendly than uncoated stocks, our printer has provided us with a recycled, glossy stock which is also acid-free, making it a unique choice for many of those in our readership who archive this publication for years. So, as it turns out, this stock is a durable, recycled, lightweight, acid-free paper which addresses many of the needs we faced in our selection process. The printer we selected is extremely environmentally conscious. They recycle wastage extensively, and everything—including the Journal—is printed with soy-based inks rather than petroleum-based products which are far more toxic to the environment.

We also selected the glossy paper stock because we considered it to be more readable, but there we get into aesthetics. Those questions will ultimately have to be decided by feedback from our readers. How about it, folks?

*Larry Goldsmith,*
*Publisher*

### Thank You For Your Support...

I am writing in response to the President's Message by Fern Henry and the cover art of the February issue of the Piano Technician's Journal. Both are excellent examples of PTG's exemplary support of the SPELLS program.

The participation of piano technicians in the SPELLS program has greatly contributed to its success throughout the U.S. An endeavor of this magnitude can only succeed when technicians, educators, retailers, and manufacturers unite to enthusiastically proclaim the value of active piano participation.

On behalf of the Piano Manufacturers Association International and the National Piano Foundation, thank you for the visual support included in the Journal and the verbal support that has been expressed by members of your organization from the inception of this program.

*Sincerely,*
*Ron Raup*
*President*
*Piano Manufacturers Association International*
*National Piano Foundation*

*If you have questions about the editorial content of the Journal, comments to articles you read, or suggestions, please send them to PTG Home Office, 3930 Washington, Kansas City, MO 64064.*

## Q — The Buckskin Animal Of Choice?

From what animal is buckskin obtained? Is it necessarily from deer or is it a product of a special tanning process of other skins?

*Anonymous Reader*

## A — From Karl R. Meyer

*Karl R. Meyer is the owner and operator of Richard E. Meyer & Sons, tanners of piano action buckskin since 1852.*

Piano action buckskin is manufactured by using a buckskin tannage on deerskins. This tannage can be used on other types of hides but the fiber structure of the deer family is the most suited for piano actions. Moose, elk, and deer from tropical countries around the world have been used. Spring or bounce and resilience with a fine suede surface are the important qualities that piano action buckskin should have.

## Q — Keybutton, Keybutton...Replacing A Set

What is a good method of replacing a whole set of key buttons? What fixtures can be used to line them up properly and clamp them in place?

*Eric Schandall*

## A — From Paul and Oksana Revenko-Jones

*Paul and Oksana Revenko-Jones are the owners of Music of the Spheres Pianoworks, which has been in existence since 1971 in various forms, but located in Chicago since 1985. They are full rebuilders, including soundboard replacement (Gravagne boards), bridge replacement and recapping, action rebuilding and so forth. They subcontract their refinishing, although they offer substantial finish restoration services as an attractive alternative to refinishing.*

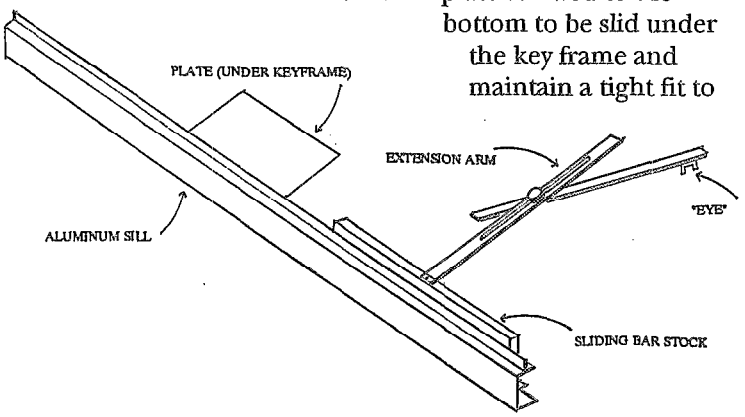
Keybuttons are those wonderful little pieces of wood on the top of keys at the balance rail pin; they are typically ignored by most technicians until the bushing in the button needs to be replaced, or the button has split so badly that the key wobbles dramatically, or both, the former condition the cause of the latter. While methods and materials vary widely, the end result *cannot*. They are the most critical stabilizing feature of the key as a whole when, correctly installed and functioning, they add height to the center of the key and thus vertical stabilization, as well as lateral control (with the help of the front rail guide pin) when the bushing in the button is correct. The button is designed so that the mortise where the bushings fit guides the movement of the key exactly parallel to the centerline of the key; thus, at the extremes of the compass of the keyboard where the keys are offset, toward the bass in the bass and toward the treble in the treble, the keybutton itself will be parallel to the key's angle of offset, but the mortise in the button must be exactly parallel to the front center line of the key, or put another way, 90 degrees to the front rail of the key frame. If not, the key will either rock, wobble, or bind in the mortise as the key is depressed and cause heavy, uneven touch as well as severe wear of the balance rail bushings (guaranteeing damage to or cracking of the button at the most extreme angles). Further, squaring the key for level will be difficult if this is an issue.

All of this from one little piece of wood with some cloth in it! Repairing one or two broken or damaged buttons is not difficult as long as certain precautions are taken, and can be very satisfying when doing overall action and key repairs on older pianos. But replacing whole sets can be daunting and requires some preparation and proper tools, as well as the proper keybutton stock. Relative to that, suppliers vary in what they offer. Some purvey only a standard button either for upright or grand, and others provide a range of mortise sizes (for .145 and .160 pins) and will even do some specialty work for uncommon (particularly European) pianos. The material should be a wood that is as close in density and mass as the key itself, preferably basswood or some like material, and the bushings need to be as high quality as possible. Don't find yourself in the position of having to rebush newly installed buttons!

The first step in replacing a whole set of buttons is to mark the position of the old ones. This can be critical in certain cases where the rotation of the fallboard comes close to the button in the open position (again, European pianos mostly). Scribe a line with a hard pencil along the fronts and backs of the set of white keys and the same for the black keys; they will be often different. Premark your set of new buttons for general angles (new mortise to old mortise and cutlines), and number the individual new buttons still in the uncut stock. At this point, you can remove the old buttons with a chisel. A gentle tap at each end of the old button should pop it off cleanly; you may want to clamp the key in a

quick release vise-padded on the jaws to avoid damaging the keys. Lightly gang sand the key tops for a clean, smooth and square finish.

We precut the whole set of buttons on a small bandsaw to a dimension as close as possible to the final fit. The reason for this is that we install the buttons using the key frame of the piano as part of our whole jig setup. Rather than taking angle measurements and transferring them to a key in a different location, we have developed a jig which allows the angle to be set in place on the frame and the buttons to be placed and glued one after the other. The jig itself (Figure 1) combines a sliding straightedge made of aluminum window sill triple track stock attached to a wide plate screwed to the bottom to be slid under the key frame and maintain a tight fit to the front rail. The straightedge is approximately 18" long and only has to be shifted once or twice during the installation. A piece of aluminum bar stock slides along one of the upper tracks in the straightedge and has a swinging extension arm with a grooved "eye" attached with quick-lock nuts to achieve efficiency in duplicating and retaining the angle of the mortise in the key and keybutton. (This jig is also fine for reproducing the exact shape of a whole key when one needs to be replaced). The most critical aspect of positioning the arm and "eye" is that the "eye" should duplicate the angle of the mortise, not the angle of the button itself. It is the mortise angle which is being set. While you may use any materials at hand, the principle remains the same: a jig which establishes stable and precise position in all dimensions.




We work on the white keys first, then the black keys for reasons of adjacency and the generally overall different position of the keybuttons in each group. One by one, with the keys on the frame and jig in position, the precut buttons are positioned and glued. Lateral placement is critical here, and we use a combination of a tiny square and a bubble level on each key as we move along. (If you did any regulation of the balance rail pins or replaced them, this lateral control is absolutely critical.) We simply slide the extension arm along the straightedge from key to key. As we glue each button in position, we remove the key from the frame and put the newly installed button and key in a clamp designed for this purpose (Figure 2). It is simply trapwork springs screwed onto blocks high enough to allow the key to sit next to the block with the spring on top. The spring jig accommodates twelve keys, and once it is filled, the first keys placed in it are stable enough to be removed and so on. Once all keybuttons are installed, we use a stationary belt sander and sharp chisels to smooth the rough edges. The whole job generally takes about three to three and a half hours from start to finish. As in all of our work, preparation is critical. We could probably develop further efficiencies, but we aren't a factory; it can be a fun job and the end results are wonderfully stable keys; they're pretty too.

## Q — *It's A Tuning Setback*

For the last few months, I have been having a setback in my tunings. I am experiencing a problem which is adding an extra hour onto my one hour and 45 minute tuning time.

Thus far, I am not yet an RPT, but if I can work this problem out, I will start taking the series of tests. I have talked to two tuners in my area who have not experienced my problem, so I am assuming I am doing something wrong.

I set the temperament first then usually do the bass next, but because of this problem I go first to the tenor and treble, and sometimes do a pitch raise in the high treble section (after the last break). By the time I complete the bass section, my area above the temperament is flat and occasionally my temperament is out. My experience is different with each piano, but as always the treble section after the last break is always flat. This is always a problem when the pitch is 5 cents flat or 10-20 cents flat. Any piano which is over 20 cents flat I do a pitch raise and then a fine tune and I still encounter this problem. I always set the pins and pound out the keys to settle the strings. Can you tell me what I may be doing wrong?

## A

### From James H. Johnson

*James H. Johnson is a 1968 graduate of the Brigham Young University Piano Technology program. A Guild member for 25 years, Jim has extensive concert and college piano maintenance experience in the San Francisco Bay Area and a small town in the Sierra foothills.*

I'm not sure I have the definitive answer to your problem, but I do have some ideas which may lead you to a solution.

In your letter, you didn't mention how you strip mute the piano, but from your problem I'm going to assume that you might be muting the entire piano and tuning the center strings from the temperament to the top of the piano, then tuning the unisons. If this is the case, after tuning all the center strings, you have only dealt with one-third of the tension shift of the piano. When you then tune the unisons, you add the remaining two-thirds of the tension which would cause your temperament and tenor sections to drop in pitch. I prefer to strip-mute just the temperament octave. After setting the temperament on the center strings, I then work my way to the top using rubber mutes and bringing up the unisons as I go. I sometimes have to follow an octave behind and touch up a few notes that slip here and there, but when I get to the top, I have dealt with all the tension changes and corrected any errors that might have slipped in. I then tune the bass which I find has very little effect on the treble tuning. I find that I can usually handle a pitch change up to about 10 cents with this method.

When I am faced with a piano that is more than 10 cents flat, I do a complete pitch raise followed by a fine tuning. The purpose of the first tuning is not to get the piano sounding good, but to get the tension averaged out with the piano at the proper pitch. We all realize that to do this, we must tune the piano above pitch to allow it to fall back where we want it. The difficult thing is to determine just how sharp we need to pull it. The general rule is that the piano will drop about 25% of the amount it is raised. A piano that is 30 cents flat will need to be raised to 10 cents sharp to end up at the desired pitch. The problem is that not all pianos behave according to the rule—some pianos fall less, some more, and some fall considerably more. Unfortunately, I can't tell you how to predict which pianos are which because it is a very intuitive decision-making process, developed only after tuning many pianos. I can tell you that most pianos need a little extra compensation in the tenor section above the first break (the area with the last dampers). This section seems to fall more than the rest of the piano. To help you develop this skill yourself, I suggest keeping a log of each piano you tune, recording the starting pitch, the amount you pull it up, and the final pitch. After a period of time you can begin to adjust your pitch raises based on your own experience.

When I pitch-raise, I use a much different method than for fine tuning. I strip-mute the entire piano and tune all the center strings from the temperament up to the top. I then tune all the right hand strings to the center strings, removing the mute strip one note at a time, working from the top back down to the bottom of the temperament. I then tune my way back up to the top, tuning the left hand strings to the two open strings that are already tuned. I then tune the bass. I find that this adds the tension to the piano in a very even way which minimizes the amount that the piano drops.

This may not apply directly to your question, but you might also want to consider trying an impact tuning lever. I find that with this tool the pianos drop a little less and I don't break nearly as many strings. I also get to sit down even when tuning the tallest old uprights. Also, get a copy of the PTG Tuning Exam Source Book. You'll find it full of useful information.

I hope that I have given you some ideas which might help you solve you problem. Good luck and let me know how things turn out.

## In Response

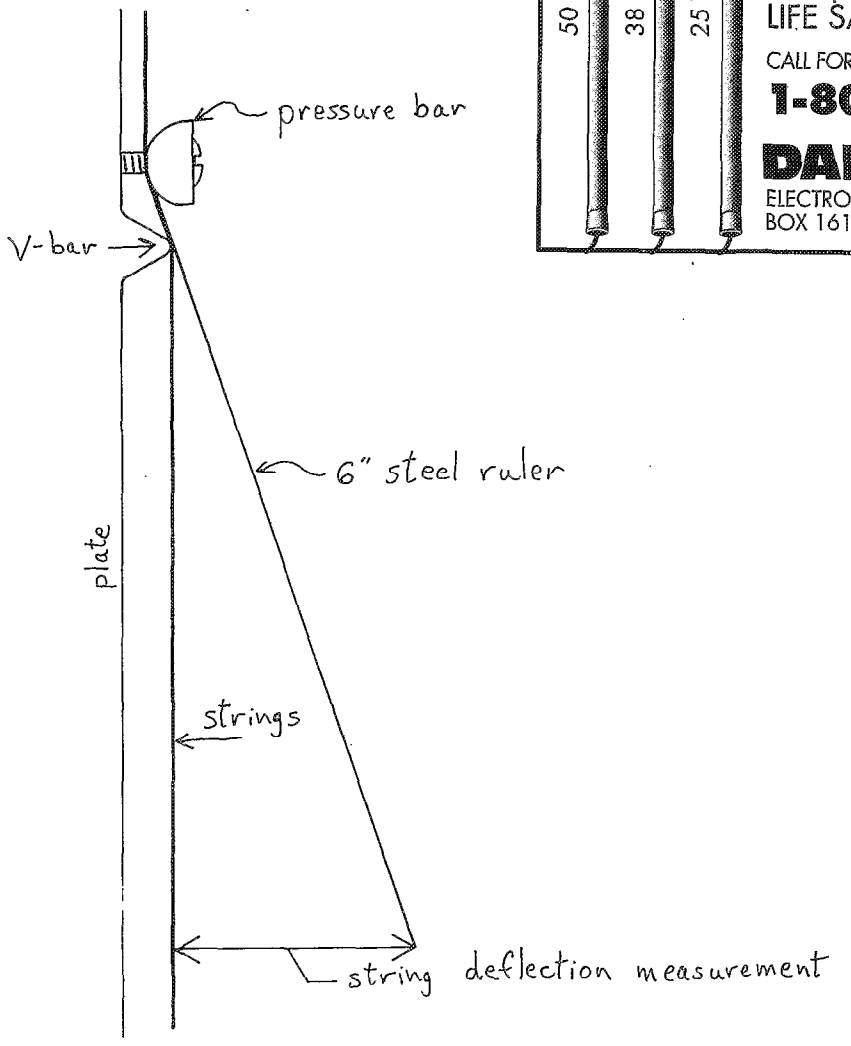
*Here is some additional feedback on Clark Foerster's question (answered by Bernard Mollberg) in the May Journal. I suppose it could go into the Q&A dept. under the heading, "Follow-up on setting pressure bars," or in the Tips section under a heading like, "Setting proper pressure bar height."*

### From Bill Spurlock

In May's Q&A section, Bernard Mollberg wrote an excellent response to a question of setting the height of pressure bars in upright pianos when restringing. I'd like to share a simple method of measuring pressure bar height. I learned this years ago from another member; unfortunately I can't recall the source to credit them.

The purpose of the pressure bar is to create a certain deflection angle of the strings over the V-bar, to properly terminate the speaking length. Therefore, the most relevant measurement when installing/adjusting a pressure bar is not its height, but rather the string deflection angle. This angle can be very easily measured using the common 6"

thin steel rule, as shown here. Just lay the ruler on one unison of strings, with one end butted up under the pressure bar. The bulk of the ruler then extends out over the speaking length, showing the strings' angle of deflection as they pass over the V-bar. Rather than measuring this angle in degrees, just measure the height of the far end of the ruler above the speaking section of the strings. On most pianos, this varies from 1 5/8" to about 1 7/8". You could determine the actual string angle by dividing this height by the distance along the ruler from the pressure bar (usually about 5 1/2") to get the sine of the angle, then using trigonometry tables to determine the angle in degrees. However, that is unnecessary since you wouldn't normally know what



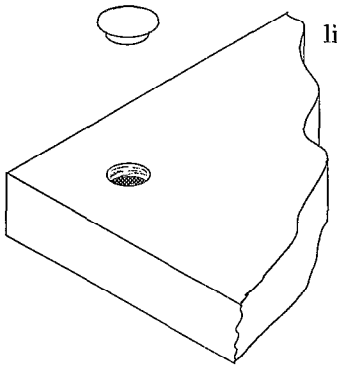



angle is best. Instead, just record the ruler height measurements at several points before unstringing the piano, then duplicate them when reinstalling.

When restringing a vertical, I install all the strings without the pressure bar, tightening them just enough to keep their coils tight on the pins. I then lubricate the pressure bar screws well with bees wax, and install the bar by tightening each screw a little at a time as Bernard suggested. Holding the ruler at each screw location, you can easily create a perfectly uniform string deflection angle along the entire pressure bar. It is useful to make measurements on many vertical pianos—especially those that tune easily—to get a feel for average deflection and how it relates to tunability.

## CA Glue Anchors Rubber Buttons

The rubber buttons that glue into shallow holes in case parts have the annoying habit of falling out, or getting knocked off whenever anyone rubs across them with a cloth. Sometimes after raising the lid of a grand piano, you'll find them sitting around the top of the rim, pulled out of their holes in the underside of the lid! Cyanoacrylate glue, such as Hot Stuff, is the best thing I've found to re-attach them—it's fast and they will never come out again. I use the medium viscosity. Put a drop on the end of a hammershank, then twirl the shank in the hole of the case part. A light coating around the sides of the hole is enough—you don't want any to ooze up onto the finish when the button is pressed into place. Rather than using the glue's accelerator ("Kick-it") to make the glue set up, just breathe on the rubber button before seating it. Water vapor causes CA glue to set up, so the moisture from your breath will "kick" the glue in just a few seconds. This avoids having to use the stinky chemical accelerator and the danger of getting it on the finish.



*Anonymous Reader*

## Agraffe Removal in Only 4 Easy Steps

1. Make a mark in the center of the broken agraffe shank with a center punch.
2. Scoop that mark out a little bigger and better with a Moto-Tool to prevent slippage.
3. Put a 1/8" left-handed drill bit in your hand drill or power drill set at a very slow speed and insert into mark.
4. Remove the broken thing with the greatest of ease. It will begin to turn out immediately!

The left handed drill bit is my new favorite tool. Thanks to Bill Smith for this tip. From now on a broken agraffe will not frighten me.

This is better than an easy-out, as they tend to crush and distort the old brass (which creates the possibility of ghastly problems).

*Susan Willanger*

## A tip from Bill Smith....

Sandpaper files should not be put in a tool box without being protected with either a cardboard sheath or a piece of scrap leather. If the files bang around in the tool box they will soon become dull and not do their job as they should. This also goes for metal files. Metal files should not touch each other.

## A Method For Using Brass Cauls

When we encounter tight key bushings, most everyone is familiar with ironing the bushings with the proper-sized caul on an electric soldering iron. This method, while very good, is not always long-lasting and sometimes must be repeated on very tight bushings. This can add unwanted labor on an already quoted job.

I have developed a method using the whole set of brass cauls used when replacing key bushings. My method is to heat up the cauls to the proper temperature on my electric hot plate. I set them on an old 10" saw blade in a row while cold and place this on the hot plate for 10 minutes or so until hot. The temperature setting is very important and should be derived on a scrap set of key bushings if available. Too hot is as counter-productive, obviously, as too cold.

Setting the keys in key clamps makes the job very straightforward as both keys and cauls are ready to be easily united using a set of pliers. The cauls should remain in place until cool and the job is incredibly stable compared with the other method.

*David Sanderson*

## A Tip For Fixing A Loose Treble Bridge Cap

Recently I helped fix a loose treble bridge cap on a grand piano. To accomplish the repair we first removed the strings and bridge pins, cleaned out all loose and old glue, aligned the parts with a pair of specially altered C-clamps and drilled pilot holes between the bridge pins. After

establishing these guides, I used a set of small blocks of pinblock stock center-bored for the appropriate screw size, used a soundboard steel to smear glue allllll over the cap and screwed through the pinblock spacer through the cap and into the bridge base. The small squares of pinblock stock acted to spread the pressure over a much larger area than the average soundboard button and be much less liable to cracking and splitting in half. Once the glue has had appropriate time to dry remove the screw and block system, drill a 7/32" hole and plug with hammershank stock. HINT....cut your hammershank plug slightly shorter than the depth of the hole in the bridge. This allows for glue and a minimum of sanding—you don't want to change bridge dimensions.

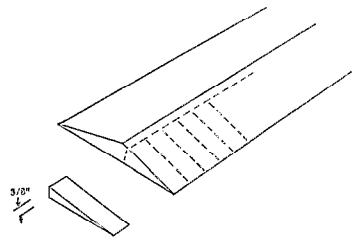
*Bob Bartnik*

T&T

**Tuning Mutes From Hammer Scrap Felt**

Pieces of hammer scrap felt from supply houses can be cut up to make great tuning mutes for grand pianos. These 3/4" wide x 3 1/2" long mutes stand up in the strings reliably and are easy to handle. Supply houses sell hammer felt scraps by the pound. In most batches you'll get some lengths that are about the right taper and thickness, as shown. If the taper is too blunt, you can thin it by sanding with coarse paper on a belt or disc sander. Once you have the right taper, just slice off as many 3/4" wide wedges as you need. If you want to get fancy, you can dip the top 1" of each mute into thin colored lacquer of your favorite designer color.

*Anonymous Reader*



*Send your tips, techniques or ideas about tools to the PTG Journal, Managing Editor, 3930 Washington, Kansas City, MO 64064. All suggestions will be considered.*

# PACE

Professionals Advance through Continuing Education

## LESSON PLAN

# Technical Lesson #11

# *Vertical Regulation Adjusting Lost Motion & Leveling Keys*

By Bill Spurlock, RPT
*Sacramento Valley Chapter*

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

### *In brief*

Lesson #10 explored the relationship between key dip, hammer blow distance, and aftertouch in the vertical action, and suggested a method of determining the optimum blow and dip dimensions for any vertical piano. The hammer rail was adjusted to set the hammers to the desired blow distance. In this lesson, participants will continue the regulation sequence by adjusting capstans and leveling the keys.

### *Getting started*

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

### *Hands-on session setup:*

To teach this lesson in a hands-on format, you will need one or more direct blow vertical pianos in good condition. Used pianos in a dealership or practice room pianos at a college are good candidates, as long as they have only light wear. Ideally, parts alignment as covered in lessons #8 & 9 should have been performed, and optimum hammer blow and key dip dimensions determined as in lesson #10. Action models can also be used, although not all of the steps here will apply. For instance, key leveling cannot be done on a single note model..

Additionally, meeting set-up should include:

- Extra regulating tools
- Extra key leveling straightedges (if lesson is done with pianos rather than models).

### *Estimated lesson time*

One to two hours, depending upon the number of participants.

### *Tools & materials participants must bring*

For this lesson, participants should obtain the following tools:

- universal tool handle
- flange screw driver blade
- capstan adjusting tools, for both square and hole types.
- 6" steel rule, graduated in millimeters and inches (inch side should be graduated in 32ths, not 64ths, for ease of reading)
- key leveling straightedge (3/4" x 3/4" x 1/8" x 48" angle aluminum from a hardware store will work as long as it is straight)
- devices for propping up end keys to support straightedge as shown in lesson #9
- Key punching lifter

### *Assigned prior reading for participants*

PTG Technical Exam Source Book (PTG Home Office, 816-753-7747), pages III.3 through III.6

### *General instructions*

When the key of a vertical piano is released *quickly*, the jack will slip completely back under the hammer butt—ready to play a repeat blow—before the hammer reaches its rest rail. However, when the key is released very *slowly*, the hammer usually returns to the rest rail before the key and wippen reach their rest positions. Thus the hammer returns "ahead" of the wippen, preventing the jack from slipping back under the hammer butt until all parts are back at rest. Once in the rest position, the jack can slip back under the butt only if a slight clearance exists between the top of the jack and the hammer butt leather, as shown in figure 1. That clearance is called lost motion, and is necessary to ensure the jack can always re-set to play the key again. (In certain cases, the jack will always slip back under the hammer butt well before the hammer returns to rest, no matter how slowly the key is released. This symptom is caused by either a tight hammer center or a weak hammer butt spring. Either problem slows the hammer return, allowing the wippen to begin returning more quickly than the butt.)

How much lost motion should there be? Just enough to allow the jacks to get back under the hammer butts reliably under all conditions. Excessive lost motion gives the action a loose feeling. It also accelerates wear of the butt leather, because when a key is struck, the jack gets a running start before slamming into the butt leather.

## Methods of checking lost motion:

1. Pull back on the hammer rail slightly while watching the hammers, as shown in photo 1. If lost motion is present, the hammers will follow the rail back slightly (until the butts stop against the jack tops). On most properly regulated pianos, expect to see the hammers follow the rail back about 1/16" or slightly more. If there is no lost motion, the hammers will stand still while the rail is pulled back. This is a quick method to find out if there *is* lost motion, how much there is, and whether it is even from note to note. However, it does not prove whether the lost motion is adequate to ensure reliable jack return for a particular action.

2. Tap along the backs of the keys, close to the capstans. This is a quick test to show whether any hammers are standing off the rail, i.e. held off the rail because their capstans are too high. It will not demonstrate whether adequate lost motion exists.

*Figure 1*

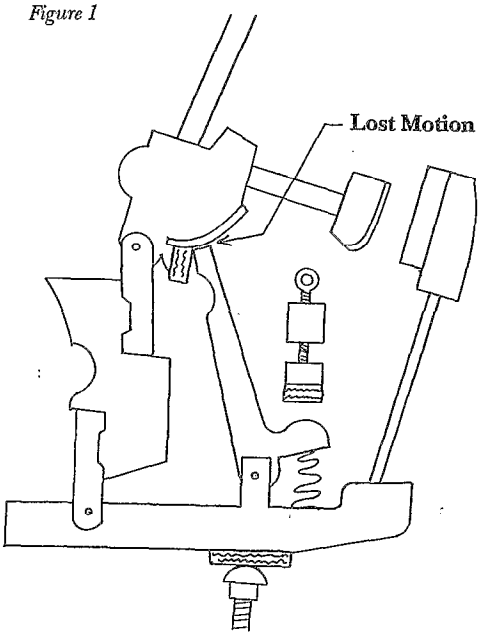



*Photo 1*

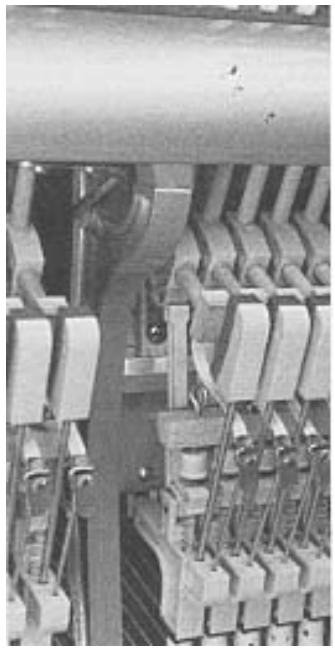


*Photo 2*

3. Play each key and release very slowly, watching to see that each jack has slipped completely under its hammer butt by the time the key has fully returned. Do this with the damper pedal depressed, so the damper springs do not help to push the wippen and key back to rest. The jack in photo 2 has not fully returned—it is only partially under the butt, not back against the butt felt.

This method is excellent for proving that each jack will return reliably. However, it is actually a test of several action points, not just lost motion. Failure of the jack to return fully under the hammer butt during this test can result from i: sufficient lost motion or: excessively tight wippen flange pinning, tight key bushings, tight balance pin hole, tight jack pinning, a weak or broken jack spring, or inadequate key weighting. (In spinets, any binding of the drop lifter assembly can also cause this symptom.) If a jack does not return during this test, lower the capstan slightly and recheck. If the jack still does not return even with generous lost motion, use test #4 to isolate the problem further.

4. With the action at rest, use a small screwdriver tip or other tool to trip each jack tender. Watch to see whether the jack returns fully under the hammer butt (this method takes the key and wippen out of the picture). If increasing lost motion does not cure a reluctant jack, trip the jack quickly and watch its movement compared to neighbors. Sluggish movement will show the problem to be tight jack pinning or a weak jack spring. Correct these problems, then readjust the capstan. If a jack returns reliably using this test, but did not when using test #3, check for tight key bushings, wippen center, etc.

5. There should be just enough lost motion to allow the jacks to return completely under the butts using tests #3 or #4 above. To check for excessive lost motion, use test #1 and note any hammers that follow the rail back 1/8" or more. Also feel for lost motion by touching the keys very lightly without causing the hammers to move; if there is noticeable free movement at the fronts of the keys (more than about 1/32"), raise capstans to reduce lost motion as much as possible while still allowing reliable jack return.

Try all five lost motion tests above to gain a feel for them. They can be performed on action models or on sample notes of a console or larger piano. To continue with the regulation sequence begun in Lesson #8, adjust lost motion after setting the hammer rail position to the proper blow distance as determined in lesson #10.

*Photo 3*

**Photo 3:** Once capstans are accurately set, the keys can be leveled. Prop up keys #1 and #88 to support a straightedge as in lesson #9. Using two fingers, lift and tap the straightedge at about key #35, then at key #55, looking for any keys that are too high (any that wink). Mark their locations along the front of the keyframe. Then lay out paper balance rail punchings in front of any low keys. Observe the gap between the straightedge and each low key, then lay down a punching that is half that thickness. Don't worry about choosing the exact correct punching at first. Key leveling is done in two or more stages, with the level being further refined in each stage.

When all punchings are laid out and all high keys marked, remove the straightedge and insert the new paper punchings *under* the felt balance rail punchings. Remove a paper punching from any keys that are too high, or sand the key bottoms slightly if no paper punchings are present. When lifting keys off the balance rail pins, always lift on both sides of the balance rail to minimize the key angle. Tipping the key steeply by lifting only at the front causes the key balance hole to bind on the key pin, wearing the hole and resulting in a pully key.

**Photo 4:** Prop up the first and last sharps to be approximately 1/2" above the naturals, then use the straightedge to level all sharps. Note: As with natural key height, manufacturer's specifications should be consulted if available.

1/2" is a common measurement. However, one additional criteria is that when a sharp is fully depressed, it should be at least 1/16" above the naturals (approximately thickness of a nickel). If an unusually deep key dip is being used, sharps may have to be set higher to avoid "burying" below the naturals when depressed.

## Summary

- Some lost motion (space between the jack top and hammer butt leather at rest) is needed to allow the jack to return fully under the hammer butt when the key is released very slowly.
- Excessive lost motion, beyond that required to allow the jack to return reliably, can accelerate wear of the butt leather and makes the keys feel sloppy and loose.
- The correct amount of lost motion is the least that will allow the jack to return fully when the key is released *very* slowly after a hard blow, with the sustain pedal depressed.
- Often new pianos are found to have the hammer rail resting too far back due to settling of the rail rest felts during shipping. Here lost motion should be restored by propping the hammer rail forward slightly, rather than lowering all capstans.
- If lost motion is excessive and due to wear of the butt leather, wippen cushions and backrail cloth, reduce it by raising capstans, rather than by lowering the hammer rail.

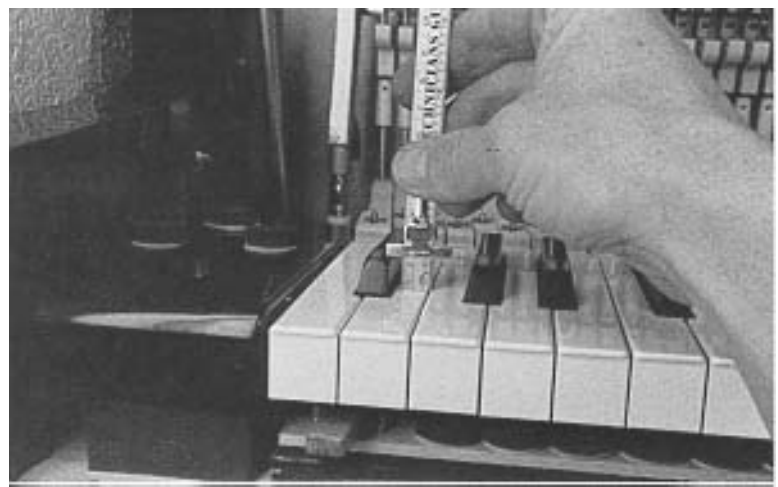


*Photo 4*

**Common wholesale checks for lost motion are:**

- Pull back on the hammer rest rail to see if the hammers follow the rail back about 1/16"; those that don't have no lost motion, those that follow farther may have excessive lost motion.
- Tap the keys near the capstans; if any hammers wink, they have no lost motion.

- **Important:** These checks are useful, but it is essential to confirm the correct lost motion *using the jack return test* on each key as a final regulation step to avoid that call-back for a "sticking key."

- Key leveling is most efficiently done using a straightedge which spans the entire keyboard. However, a shorter stick can be used by setting several sample keys to the right height and spanning between samples with the short stick.
- Always place paper punchings *under* the cloth punchings.
- Typical sharp height is 1/2" above the naturals, but this can vary depending upon key dip. Sharps must not stop any lower than about 1/16" above the naturals when fully depressed.

*In brief*

This lesson is the second of several dealing primarily with tuning just or pure fifths and fourths. The goal of this lesson is to give further ear-training practice in tuning these just intervals, and to demonstrate why we contract the fifths and expand the fourths from just in tuning equal temperament. In this lesson, each group of participants will follow a simple tuning sequence of just fifths and fourths which will demonstrate the ditonic or Pythagorean comma.

Owen Jorgensen, RPT, defines a *comma* in part as follows: "the difference between two sets of just intervals or combinations of just intervals. A comma always exists and creates wolf intervals in various locations of an instrument with a conventional keyboard that is tuned in just tuning or in other systems which are close to just tuning. Commas prevent the intervals used on a conventional keyboard from being all justly in tune at the same time." (p.769, *Tuning*)

Jorgensen further defines the *ditonic comma* as "the excess of twelve just fifths over seven just octaves. Its ratio is 531448 to 524288, and it is 23.46 cents in size. This is also known as the Pythagorean comma." This ratio is derived mathematically as the ratio $(3/2)^{12}$ over $(2/1)^7$, which reduces to $3^{12}$ over $2^{19}$, and finally to 531441 over 524288. (p.770, *Tuning*)

In tuning equal temperament, we avoid any wolf intervals by contracting the fifths and expanding the fourths by approximately 1/12 of the ditonic comma.

# PACE

Professionals Advance through Continuing Education

## LESSON PLAN

# Tuning Lesson #11

# *Tuning Just Fifths and Fourths - Part 2*

# *The Ditonic Comma*

By Michael Travis, RPT
*Washington, D.C. Chapter*

*This monthly lesson plan series is designed to provide supervised practice of tuning skills as a supplement to independent study and practice. Chapters are encouraged to use this material as the basis for special Associate meetings, or for their regular meeting program. Each lesson is designed to take about one hour, with about four participants. Participants are assumed to have essential reference materials and tuning tools (see PACE checklist) and access to a well-scaled large upright or grand piano for independent practice*

Our goal is to have the octave, P5s and P4s all fairly smooth, and evenly accelerating m3s, M3s and M6s. Ways to accomplish this will be handled in future lessons in this series. In the equal temperament version of the sequence below, we narrow all the fifths and widen all the fourths to distribute the comma among them.

For the present lesson, we will demonstrate the ditonic comma by tuning a circle of just fifths and fourths over one octave. Starting at A3 (2nd partial set to A440), and following the sequence below, we observe the comma as the excess of the A4 fundamental over A440 at the end (and the expanded wolf octave A3-A4). At first glance, it may not be apparent that this demonstrates the ditonic comma. However, we will tune six just 3:2 P5's upward, and six just 4:3 P4's (inverted P5's) downward. Mathematically, that produces the ditonic comma's ratio as follows: $(3/2)^6$ times $(3/4)^6$ over $(2/1)$, which reduces to $3^{12}$ over $2^{19}$, as above.

### *Ditonic (Pythagorean) Comma Demonstration*

Strip-mute octaves three and four, and wedge mute F2, to one string. Tune all intervals just. As in PACE Tuning Lesson #10, test for just 3:2 P5s using the equal-beating M6-M10 test, and for just 4:3 P4s using the equal-beating M3-M6 test. Special instructions for step 1: tune A3 as a unison to an A440 fork, testing for equal beating wide M10 F2-A3 and M17 F2-A440 fork. This M10-M17 test produces a starting pitch for A3 that corresponds to its 2:1 octave tuning with A4 at A440 by setting the 2nd partial of A3 to A440, and is necessary for this demonstration.

1. Tune A3 2nd partial to A440
2. Tune up a P5 to E4
3. Tune down a P4 to B3
4. Tune up a P5 to F#4
5. Tune down a P4 to C#4
6. Tune up a P5 to G#4
7. Tune down a P4 to D#4
8. Tune down a P4 to A#3
9. Tune up a P5 to F4
10. Tune down a P4 to C4
11. Tune up a P5 to G4
12. Tune down a P4 to D4
13. Tune up a P5 to A4

Observe the ditonic comma in the wolf octave, A3-A4, and measure it as the cents deviation of A4 from A440. You may also estimate the cents deviation as four times the fundamental beat rate between the A440 fork and A4, or as four times the difference in beat rate between the M17s F2-A4 vs. F2-A440 fork (1 bps ≈ 4¢ at A440). How close this difference is to the ditonic comma will depend on how accurately you performed all the steps above.

### *Chapter meeting set-up:*

These lessons are most conveniently taught to a small group of four or five. Each group should have its own piano and RPT instructor. Each piano should be in a quiet environment for close listening. Avoid using pianos that present serious obstacles to tuning, such as deeply grooved or misaligned hammers, string termination noises, etc.

## *Tools & materials participants must bring*

Tuning hammer, mutes and A440 fork.

## *Home study assignment for participants*

Read: Owen Jorgensen, *Tuning*, MSU Press, 1991, "Glossary", pp. 769-79. See also: *Steinway & Sons Technical Reference Guide*, (available for about $20 plus shipping from the Steinway & Sons Service Department, phone 1-800-366-1853), "Technical Service Manual," pp 57-58, "Tuning." This shows an equal temperament version of the tuning sequence we use in this lesson. Once you have mastered this lesson, you might try the same general sequence as an equal temperament using the Steinway instructions.

## *General instructions*

See also PACE Tuning Lesson #10, general instructions: review with participants how we normally tune and test for fifths and fourths. Make sure everyone understands the principal tests.

Follow the instructions above for the ditonic comma demonstration. The instructor should tune the A3 unison to an A440 fork as in step one, and then divide the remaining twelve steps among the participants present. Each participant should take about ten minutes to tune his/her assigned notes as pure fifths and/or fourths and as unisons, using the appropriate checks to prove the tuning.

After the last participant has tuned the fifth up to A4 (step 13), note the sound of the octave, A3-A4. Measure the cents deviation from A440 at the A4 fundamental, or estimate it using aural tests. Discuss the results in terms of how we normally tune fifths and fourths in equal temperament.

*The following excerpt is from Steinway & Sons' Technical Reference Guide, used here by permission of Steinway & Sons.*

# Tuning

This information is to be used in conjunction with the *PACE Tuning Article—Tuning Just Fifths and Fourths—Part 2*

**Background:** Solid tuning is a must. Although there are numerous temperaments, Steinway maintains the A440-A220 temperament. **In order to achieve a solid tuning it is important that the technician consistently uses forte test blows with each strike of the key. Make sure the tuning hammer turns the tuning pin within the pinblock and that the tuning pin is at rest and stable before moving on.**

Steinway & Sons stresses the importance of aural tuning. Developing piano tone is a mechanical and musical art. Solid aural tuning exercises and develops the musical ear, giving the technician a greater ability to master the methods used in tone building.

**Hints:**

All 4ths are wide from perfect intervals

All 5ths are slightly narrow from perfect intervals

All M 3rds are wide from perfect intervals

All M 6ths are wide from perfect intervals

M 3rds and M 6ths should accelerate when moving chromatically up the scale, and decelerate when moving down the scale.

**Step 1: Temperament Tuning**

A) Tune A440 to A440 fork

B) Tune A440 down to A220—wide octave interval

C) Tune A220 up to E—narrow 5th interval

D) Tune E down to B—wide 4th interval

E) Tune B up to F#—narrow 5th interval

- check M6 A-F#

F) Tune F# down to C#—wide 4th interval

- check M3 A-C# < M6 A-F#

G) Tune C# up to G#—narrow 5th interval

- check M6 A-F# < M6 B-G#

- check following intervals for even and consistently faster speed progression: M3 A-C# < M6 A-F# < M3 E-G#

H) Tune G# down to D#—wide 4th interval

- check M3 A-C# < M3 B-D#

I) Tune D# down to A#—wide 4th interval

J) Tune A# up to F—narrow 5th interval

- check M3 A-C# < M3 C#-F < M3 F-A

K) Tune F down to C—wide 4th interval

- check M3 C-E < M3 C#-F
- check M6 B-G# < M6 C-A

L) Tune C up to G—narrow 5th interval

- check M6 A-F# < M6 A#-G < M6 B-G# < M6 C-A
- check for fit in relation to previously tuned M3s

M) Tune G down to D—wide 4th interval

- check for fit in relation to previously tuned M3s and M6s

N) Check D up to A—narrow 5th interval

- check all M3s and M6s
- check all 4ths
- check all 5ths

# Temperament To The Top

*Richard West of the Nebraska Chapter wrote articles for the Piano Technicians Journal a few years ago (June, July 1990) in which he compared tuning in the high treble of the piano to alchemy, the medieval science of wishful thinking that sought to turn common metals into precious ones. I think Richard was right; just as alchemy exists only in fantasy, so a piano that is perfectly in tune in the high treble exists only as a fantasy in the mind of the piano tuner.*

The problem is that musicians seem to want high treble notes to be tuned sharper than can be accommodated by tuning theory. (This phenomenon is usually "explained" as a characteristic — or even a defect — of human hearing, although I have never understood how calling it a characteristic of human hearing really explains anything.) Musicians that have immediate control over pitch, such as orchestral string players, will tend to play a given high note in the musical scale at a frequency that is significantly greater than might be predicted by mathematics, that is, a given note will be played at a frequency that is much greater than twice the frequency of the note an octave below in the scale.

On the piano, a given note will also be at a frequency that is greater than twice the frequency of the note an octave below, not necessarily because of "a characteristic of human hearing," but because of inharmonicity. Unfortunately, musicians often want the high notes of the piano tuned even sharper than warranted by inharmonicity. (While the sharpness of the piano's inharmonic partials allow pianos to be tuned "sharp" in the treble, it seems likely that inharmonic partials are not the whole reason that musicians and piano tuners like to stretch octaves upward in the high treble. Electric pianos and electronic synthesizers also tend to sound flat in the high treble unless their octaves are stretched upward in the high treble despite the fact that such instruments have perfectly "in-tune" harmonic partials.) This is a real problem for tuners who also happen to be people who like everything in life to be neat and tidy.

In the higher octaves of the piano, the relationship of the high notes to each other is less important than the relationship each of those high notes has with notes lower in the scale, that is, high notes are not tuned to each other so much as they are tuned to notes in the middle of the piano. After all, in the top octave, the coincident partials of two notes a fourth apart, for example, are actually higher than the highest note on the piano. So, the notes of the high treble of the piano are tuned by their first partials to lower notes in the scale. A high note, then, is unlikely to be tuned to a note a fourth below, but rather more likely to a note an octave or two or three below. If high notes are to be tuned by their first partials, then the lower notes that can be used to tune the high notes are limited to those that have partials coincident with the first partials of the high notes to be tuned.

The notes that can be used to tune a given high note on the piano can be identified by applying knowledge of the partial series. A given note contains partials, higher frequencies that coincide with a set of notes higher in the scale. Imagine the same array of notes as in the partial series, but spelled down from a note instead of up from the note, just as if you had installed a Coleman Beat Locator upside down on a keyboard with the indicator for the first partial positioned on a high note and the rest of the partial indicators on notes lower in the scale. The second partial indicator would be on the note an octave below, indicating a note whose second partial is coincident with the higher note, and so on.

The group of notes in the scale that have partials coincident with a single high note is a useful construction, one that I have been using for many years as an aid in tuning the high treble. I made some feeble attempts at naming this set of notes, with no success. Of course, I eventually learned that the construction was well-known to some and already had a name: the Chord of Nature. The

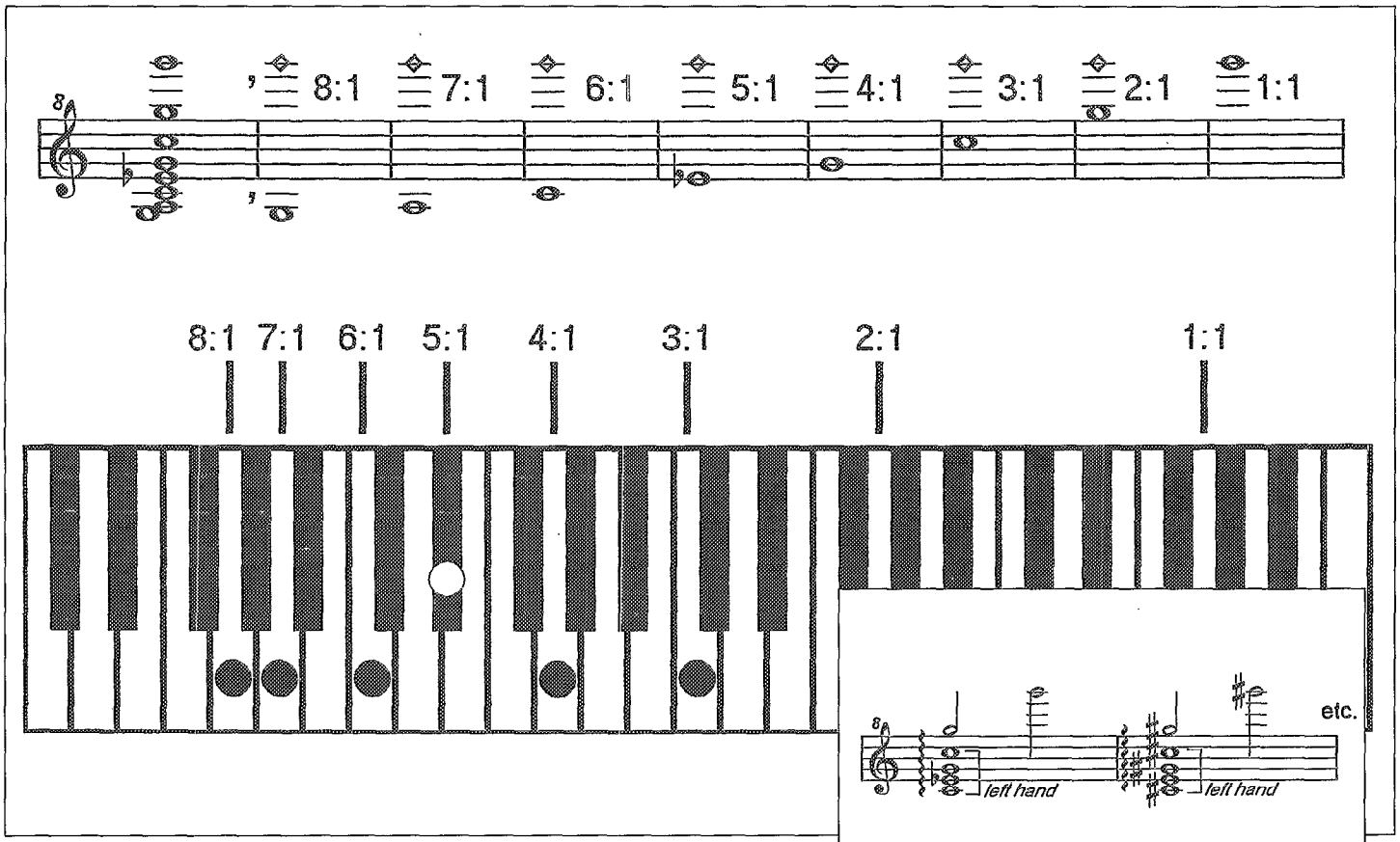
# Temperament To The Bottom

BY KENT SWAFFORD • CONTRIBUTING EDITOR

chord of nature includes the octave below a note, along with the octave-plus-a-fifth (12th), the double-octave, the double-octave-plus-a-major-third (17th), double-octave-plus-a-fifth, double-octave-plus-a-minor-seventh, and the triple-octave.

scale, but in addition, the higher partials of a given note are sharper (more inharmonic) than the lower partials of the name note, and the sharpness of higher partials is much more pronounced than the tendency for sharpness of partials to increase as

known as the comma of Pythagoras. On pianos, the difference in width between two single octaves (2:1) and one triple octave (4:1), or between three single octaves (2:1) and one triple octave (8:1), could be thought of as "real-world commas of piano oc-




A portion of the chord of nature fits easily under the hands and can show off a freshly tuned piano in a very pleasing way. Play the top note of the chord of nature and the octave below with the right hand. With the left hand play the 12th, the double-octave, the 17th, and the double-octave-fifth below the top note, forming a minor chord. Start with a top note of about C6, roll each chord if you want, and progress up the scale in half-steps all the way to C8. Many customers have told me they enjoyed hearing this progression (especially after hearing all the unpleasant sounds of the test blows during the tuning).

The general level of inharmonicity, and the degree of sharpness of the partials, increases from note to note as one goes up the

one goes up the scale. Assuming that notes in the treble are tuned to the partials of notes lower in the scale of the piano, the choice of which interval to use to tune a given note can make a big difference in how a given note will be tuned. If you tune notes as single octaves as you go up the scale, when you have tuned enough notes to be able to play a triple-octave, the upper note of the triple-octave may sound flat because the sharpness of three single octaves does not come very close to adding up to the sharpness of one triple-octave.

(In mathematical tuning theory, a series of twelve pure fifths will not fit into seven pure octaves. The difference in the width between twelve pure fifths and seven pure octaves is

taves." And given that the best way of dealing with commas has been a subject of debate among tuners and theorists for centuries, it is doubtful that the best way of dealing with the commas of piano octaves will ever be fully resolved either. Just a thought)

Because the combined width of three single octaves does not add up to the width of one triple octave, some stretching of single octaves is in order. Ah, but to stretch single octaves enough for high notes to be tuned to the partials of the notes a triple octave below can cause unbearable beating in the single octaves — or, at least, unbearable to some. That's the rub.

People say, about tuning the high notes, "If it sounds flat, it is flat." This isn't wrong, but it isn't good tuning theory either. This is simply saying that high notes on the piano should be tuned the way violin players play, which is to say, as sharp as feels right, without regard for the partials. But if the notes are deliberately tuned without regard to partials, then there can be no objective measure of whether a given note is in tune or out of tune. Again, this is unsettling for those of us who like things to be neat and tidy. The question to ask, if a note sounds flat, is, "Compared to what?" It is possible to tune a note so that it both sounds flat (when played at the top of an arpeggio) and sounds sharp due to excessive beating (when played as the top note in a single-octave).

Compromise is in order, but at least in this one case can be rather unsatisfying. Tuning the high treble without regard to partials, or even tuning the high treble as triple octaves, causes beating in the single octaves that some find unbearable. Tuning the high treble notes as clean single octaves can make the top notes sound just plain flat, although individual notes tuned this way can sound wonderfully full by themselves because the second partials of the notes an octave below vibrate sympathetically, enriching the tone of the highest notes.

As a practical matter, this enrichment in tone that comes from reinforcement of coincident partials should not be discounted. Carefully tuning the high notes as clean-sounding octaves (2:1) can make an otherwise weak-sounding high treble sound perfectly acceptable.

On many pianos, tuning the top notes as clean double-octaves will: form octaves that are quite wide but that do not beat wildly, and let the second partials of the notes an octave below reinforce the top notes at least a bit, and make the highest notes high enough that they won't sound too flat. And — good tuning theory hasn't been thrown out the window.

The problem is that some people will still find that high notes tuned as double-octaves sound flat to them when played melodically or in an arpeggio, and as they will say, "If it sounds flat, it is flat." Sorry, there is no solution, unless, of course, you happen to be an alchemist.

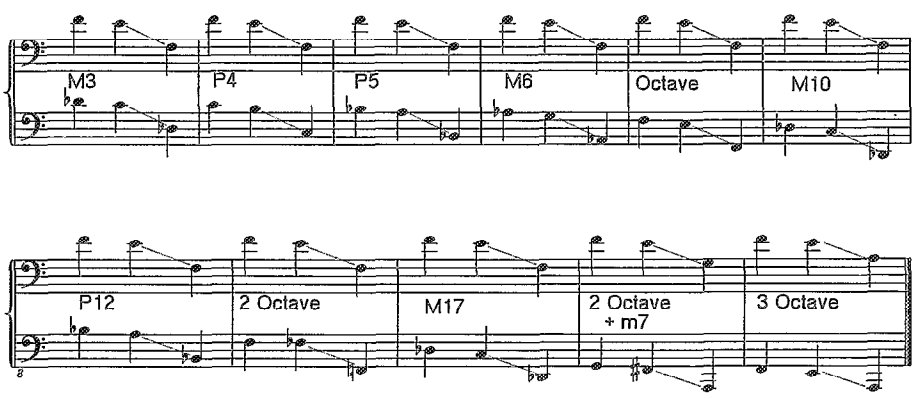
In tuning the high treble, all of the intervals that we use to tune the temperament octave in the middle of the piano (thirds, fourths, fifths, and sixths) become fairly useless. In this respect, then, tuning in the bass is easier than tuning in the treble because, although fourths and fifths are not very useful in the bass, major and minor thirds can be used, especially as ghosted intervals, all the way to the bottom of the piano. ("Ghosted" intervals are what is formed when one silently depresses the notes of an interval and holds them down while delivering a short, loud blow to the note corresponding to the coincident partials of the interval. As one continues to hold down the notes of the ghosted interval, the coincident partials of the interval will have been excited by the loud blow and should beat audibly.)

In addition, just as notes in the middle of the piano can be used to tune the high treble, notes in the temperament octave can be used to tune in the low bass. But referencing the low bass to the temperament octave can be easier because there are more intervals that can be used. Whereas tuning in the high treble is limited to the intervals of the chord of nature, there is no similar limitation in the bass.

Since equal temperament is that tuning which produces the smoothest possible progression of beat rates in the tuning intervals played up — and down — the chromatic scale, by systematically playing appropriate parallel intervals one can check and/or demonstrate the temperament. And, if one limits this playing to those intervals that include notes in the temperament octave, this can be an easy, pleasant-sounding way of referencing the bass notes to the temperament octave.

Play each interval down the scale chromatically (that is, in half-steps). Assuming a temperament octave of F3-F4, play parallel major thirds (5:4) down from C#4-F4 to C#3-F3, parallel perfect fourths (4:3) down from C4-F4 to C3-F3, parallel perfect fifths (3:2) from A#3-F4 to A#2-F3, major sixths (5:3) from G#3-F4 to G#2-F3, octaves from F3-F4 to F2-F3, major tenths (5:2) from C#3-F4 to C#2-F3, perfect twelfths (3:1) from A#2-F4 to A#1-F3, double octaves from F2-F4 to F1-F3, major seventeenths (5:1) from C#2-F4 to C#1-F3, double-octave minor sevenths (7:1) from G1-F4 to A0-G3, and finally, triple-octaves from F1-F4 to A0-A3. Some might also want to include the octave-minor-seventh (7:2) and the double-octave fifth (6:1).

I call this my "stroll through the neighborhood" because of all the "neighboring" intervals. It can be a restful exercise after the rigors of the tuning procedure and can point out problems in a hurry.



# BEHOLD

## THE UPRIGHT

By Don Valley, RPT
Western Carolinas Chapter

## The Evaluation Of Worth

### "Getting The Client Ready"

Before one gets involved in the detail of pricing the areas needing repair, over-all condition should be appraised with the client being apprised of the inherent value condition of the piano. As we are all aware, putting good money after bad is neither wise nor friend-winning.

As you scan this piano with your critical eye and your feel — as well as your common senses — try to determine with a measure of sound thinking the ultimate result. By this you can make suggestions as to whether or not the end justifies the means. Have some questions in RAM as points of reference:

*Will the musical result be an honest-to-goodness, pleasurable, and satisfying reward?*

*Will the durability be significantly extended?*

In spite of all the sensible reasons and warnings, sometimes the client insists on having the improvements made because it was "my great grandmother's wedding gift" and in such an instance, you have cleared yourself of the effects of the final result because the client has been informed adequately.

After considering the "auld lang syne" factors, you are now beginning the process of a more in-depth evaluation for the purposes of making a proposal. As you look at the piano, scanning it for its over-all condition, be on the watch for surface irregularities indicating the probability of greater in-depth problems. As you view the case, note raised veneers, separations in the grain line, indications of smoke (usually determined by the smell), flaking and powdering surface finish. Structurally, look for case part separations, especially at the bottom of the back posts and spacing blocks, warping of any part, serious soundboard warping and ungluing. Also under the top lid check the pinblock and back structure where glue failure allows the plate to be pulled forward by the downward pressure of the strings and tuning pins. All of the above is derived from a moisture factor — either too much or too little over an extended period of time.

First evaluate three major areas I call "vital signs." THE PIN BLOCK. THE BRIDGES. THE SOUNDBOARD. Dealing with these in the upright piano is different from the grand since all of these are usually less accessible in the upright, especially the pinblock. The cost to repair or replace these in the upright can be prohibitive right away, making further investigation and recommendations futile and unnecessary.

STRIKE #1: Generally, because the pinblock is part of the total construction of the back support, it is not easily — or even advisedly — replaceable. STRIKE #2: The bridges, if defective, require string removal for repair, thus added expense of string work as well. A heavy rattle or strong buzz in the bass area indicates that the bridge has come unglued from the apron — not a difficult repair to do, usually. The other bridge area often affected is the highest treble portion. Most often, the bridge or bridge cap has given up with resultant cracks, splits, ungluing, and the pins all out of place. This is repairable, but with the necessity for in-depth skill and extension of time. STRIKE #3: The sound-board can be cracked and unglued from the ribs in certain areas, causing buzzes. This is repairable. It can be separated from the rim. Both problems can be repaired up to a certain point without plate removal. However, this can be serious enough to necessitate plate removal. Be wise here in your judgment.

Generally, if more than one of the three vital signs has serious problems, replacement of the piano with a better one is recommended. Also, it is generally unwise to invest in a full restoration of a cut-down or mirror piano that has been a player or even a former player. Besides, these pianos may not have been made with a quality standard. On the other hand, lending credence to probable worth, among other quality checks, is the name. Certain names can quickly indicate the probability of excellent musical results when all is said and done because of the proven excellence of the piano over time. These are worth extensive and complete rebuilding. Such

names as Steinway, Baldwin, Mason-Hamlin, Knabe, Chickering, Sohmer, Conover, Steiff, Chase, Packard, Ivers-Pond and Vose are some notable representations.

Checking the condition of the pinblock has to be done by feeling with your tuning hammer. Many times a false alarm presents itself first. This comes from the condition when the piano is a half step or more below standard pitch. The initial feel will often indicate a "too loose" result because of lower tension on the strings. Bring your test notes up to standard first and then retest their feel. You will, in many cases, find the torque to be acceptable. If not, repinning may need to be recommended. Make certain your checkpoints are well spread throughout the length of the block. Sometimes a chemical impregnation of the block or driving the pins farther in will offer a solution, temporary at best.

A defective block can quickly be determined by checking the lower-most pins in the vertical arrangement of each unison. When you find the top two of the three-pin unison very closely synchronized in pitch with the lowest significantly lower, it indicates a deteriorated block. You can further justify your findings by bringing the lowest pin up to pitch with the upper two, arriving at a good or close unison quite consistently throughout the block. This seeming phenomenon is explainable as you realize the bottom edge of the block is more exposed to atmosphere and also is drilled and pinned much closer to the bottom edge than the top row of pins to the top edge. The prevailing condition will eventually creep through the rest of the block, affecting it the same way.

Now, let us give an in-depth look inside. One glance at the action and then the keybed area will indicate whether or not some infestation has been present. A second glance will determine whether the piano has been housed in a very dry environment. In such a case, the action wood will be very dark in color, rather than somewhat blond. That action will usually be very dry and brittle. Excessive use and wear of felt and leather is easily determinable by checking back-catches, sticker base cloth and hammer string cuts. Finger-lifting action parts and allowing them to fall to rest of their own accord will indicate hardened packed cloth and felt. Do this with dampers, hammers, jacks, stickers, keys. Playing will reveal tight or worn action centers. Check keys for excessive side play from worn bushing cloth in fronts and centers.

Now that you have thoroughly checked over the piano, determining your recommendations, it is time to record your findings and your suggestions in an orderly fashion. Once you have taken adequate time to conclude with the bottom line substantiated by your cost quotes, call the client in for a conference. Present to your client the justifications for your recommendations. At this point, make certain you have qualified your cost figures for yourself. If you are not seasoned yet at on-the-spot pricing, you will want to let the client know you will need to go back to your office, work up your recommendations and then get back in touch. It is better to be certain and make another call than to arbitrarily quote prices and find yourself coming up on the losing end. Calling the client after the deal is closed and increasing the price is not only unethical and embarrassing but challenges your integrity and often will cause you to lose the contract.

Some factors about this point in your dealings.

1. Supplying your client with a well thought-out document of your findings combined with your recommendations and the costs for such will often culminate in an immediate decision to have the work done.

2: It is of utmost importance to provide IN WRITING the specific details of your recommendations, even to those little items you may be adjusting with "NC" (no charge) attached. Later there can be no question as you refer back to these details with your client who may say, "I thought 'this' would be included." You will be glad you specified!

3. This may sound contradictory, but in protecting yourself, always leave an open window into some problem you may not have perceived from your time of evaluating the condition of the piano. I let a client know that the terms of the contract are actual, not an estimate. Yet, because I did not take every key out, not did I remove every part from the action, nor did I turn the piano upside-down, there may be some condition I could not have determined. In such an event, which is rare, I would discuss it with the client prior to proceeding with the contract. This window is not for judgments already made but for problems that could not be predicted.

4. The "second call" to present the client with your findings should be a personal call, not a phone call. As little time as possible to the second call is to your advantage if you want to do the contract. Two factors to consider are that a refusal over the phone is much easier than face-to-face, and the longer a person has to consider a cost venture, the more certain a decision not to have it done.

5. Having your figures written to present to your client leaves no uncertainty to you both. Clients do not like to hear "about" figures; they need exact figures. When a technician says it will cost about $300.00 for this and about $125.00 for that and, well, about $1,200.00 for the whole job, a client becomes very suspicious. Now you may know in your mind, because of experience, just what the final figure will be. But to help justify your credibility in the client's thinking, get it on paper in broken-down format with costs for various factions of work. This is for your protection as well as your client's.

The appraisal and evaluation are complete. You have secured the contract for repairing this upright piano. You may have even secured some "up front" money for getting started. This is a good practice if the bottom figure is a large one. Next month we will begin the actual technical process of the full rebuilding of the upright. The progression will be from the standard repair of action, keyworks, and pedal mechanisms on to the larger jobs of restringing, plate and soundboard, case repair, and refinishing.

## Backcheck and Repetition Springs: Finishing Off The Touch

# Tenth in a Series of Articles on *Grand Action Regulation*

**Don Mannino, RPT**
*National Service Manager*
*Young Chang Pianos*

*If my last article was a bit much to wade through, rest easy—things should get easier now. In a future article I will be reviewing all of the previous regulation steps, and there will be a complete regulation checklist at the end of this series. Hopefully any lack of intelligibility on my part will be cleared up at that time.*

In order for the backchecks to function properly, there are a few items that should be inspected and corrected as needed. The backchecks must be mounted at the correct height, they must be set correctly. We have already taken care of aligning the backchecks to the hammers, but we now need to take care of the other two items.

The usual guideline for setting the height of the backcheck is to depress the key fully so that the hammer is held up in the drop position (suspended by the repetition lever and spring). The top of the backchecks should usually be slightly below the hammer tails. The best way to evaluate whether this rule will apply to the action you are working on is to simply regulate a few backchecks, and look at where the hammer tail meets the backcheck.

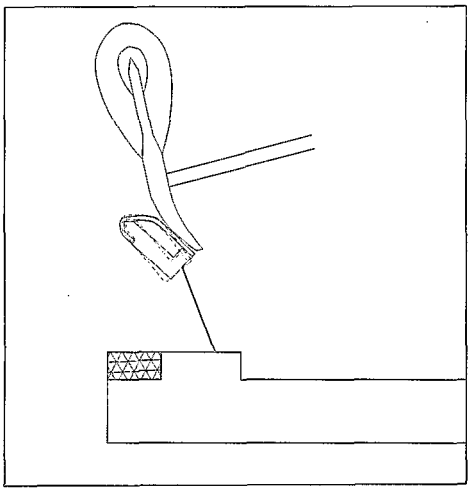
Most backchecks are made with the buckskin glued to the wood at both ends. The leather is glued to the back side of the backcheck wood, then stretched over the top of the wood, over a felt cushion, and then glued to the wood again at the bottom of the backcheck. This design gives a relatively small area for the hammer tail to meet up with. If the backcheck is a little too low, the hammer will check too high, giving unreliable checking and premature wear of the buckskin. If the backcheck is too low, the hammer will end up checking with the tail contacting the backcheck below the felt cushion, once again causing unreliable checking.

If the backcheck has a long underfelt with the skin glued only to the felt at the bottom, there is a little more leeway when setting the height of the backcheck, as the hammer tail has a longer area in which to contact the backcheck. These types of backchecks are more sensitive to being too high because the bottom of the backcheck tends to stick out towards the hammer a little more, possibly dragging on the hammer when the key is played hard.

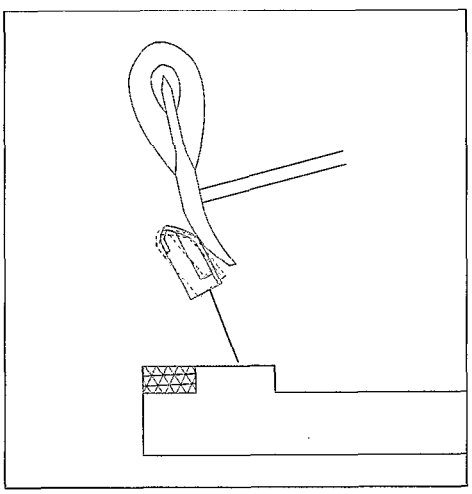
Small adjustments in the height of the backchecks may be made by turning them up or down on the wire (which is usually threaded at the top). If the backchecks are loose on the wires they may be tightened by applying thin CA glue to the wood where the wire is threaded in. Large changes in the height of the backchecks usually need to be made only when new backchecks have been installed, in which case the wire can be driven deeper into the key.

A more common problem in backcheck regulating, and one which is often missed by technicians, is the angle of the backcheck as it meets the hammer tails. There are complex ways to describe the ideal angle, and I am sure every piano manufacturer who has designed their own action has CAD drawings showing the correct relationship between hammer tail and backcheck. In practice, it is really a very straightforward thing to adjust, however.

## Step 15: Set the Backcheck Angle



Backcheck which is angled too far back causes the hammer tail to jam the leather.



Backcheck which is angled too far forward does not grab the hammer tail solidly enough, causing unstable regulation.

Rough regulate the backcheck of a sample note in the bass on the work table. Now play the note so that the hammer checks, and tap on the top of the hammer to drive it deeper into the backcheck. It should not be too difficult to drive the hammer down about a centimeter lower than the check position. If the hammer can be tapped down easily past the backcheck, the angle of the backcheck is too shallow, meaning the backcheck is too vertical or too close to perpendicular to the key. Using a pair of parallel, smooth jaw pliers (sometimes called damper pliers), grab the backcheck from above, front to back so that one side of the pliers is on the buckskin and the other is on the wood, put your thumb on the bottom of the backcheck at the rear for support, and bend the backcheck back a little. This should result in a slight bend in the backcheck wire at the very top, where it goes into the backcheck. Now readjust for proper checking, and do the test again. You should notice a definite change in the feel of the hammer as you tap it down into the backcheck. Once again, it should not be too hard to drive it in, but it should not drive all the way down easily.

If it is difficult to get the hammer to drive down into the backcheck further in the test above, then the angle is too steep. Use the same procedure, except support the bottom edge of the backcheck at the front, then use the pliers to straighten the backcheck angle a little.

After you are satisfied with the sample, check the opposite end of the section and adjust it so it feels the same when you drive the hammer into the backcheck in the test described above. Set samples in each section of the piano using this same test, then raise all of the hammers up and out of the way, and bend all the wires (as needed) to match the angles of the samples. After you have quickly gotten them into the ballpark, use a straightedge on the backs of the backchecks as a gauge to help bring all of them to a consistent angle. Finally, rough regulate the checking again before going on.

## Step #16: Regulate the Hammer Checking.

The basic rule to follow for backcheck regulating is to set them for the highest possible checking with no possibility that the hammer tails will drag on the backchecks on the way up during a very hard blow. If the height and angle of the backchecks are correct, the regulation is usually as simple as that.

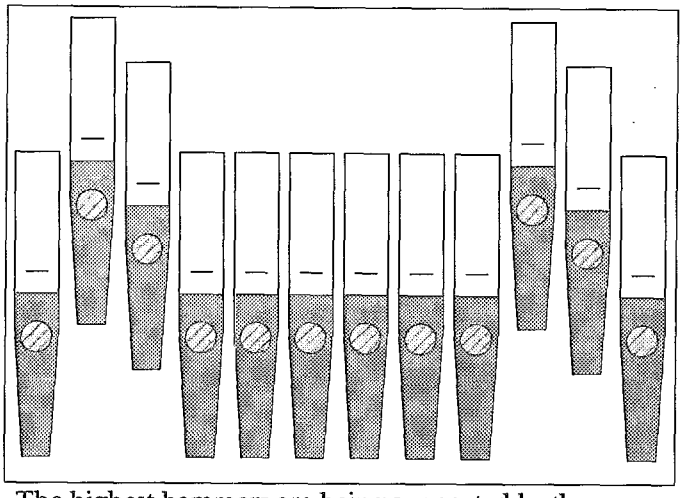
I usually regulate the backchecks with the action setting half on my lap and half on the keybed. Start with the first note (as good a place as any, I guess), and bend the backcheck forward so that the hammer checks quite high. While holding the note in check, play the neighboring key slowly so that the hammer is held up at the drop position. Observe the difference in height between the checked hammer, the suspended hammer, and a neighboring hammer at rest. This is the "three hammer comparison test," which is just a quick and easy way to gauge the height as you work with the backchecks throughout the scale. Slide the action into the piano, and do the same test, observing the position of the three hammers.

### Hammer Tail Drag Test

Pull the action and test the note for a dragging hammer tail. Hold the hammer down with one hand as you press the key with the other. Use plenty of force to compress the action parts, simulating a very hard blow on the key. Now rock up and down on the key, all the while maintaining pressure on the hammer, and feel for contact between the hammer tail and the backcheck. This is the "Hammer Tail Drag Test." If there is any contact, readjust the backcheck back a very small amount and test it again. When you have established the highest adjustment which will not allow contact with the hammer tail, do another comparison between the three hammers (at rest, in check, and in the drop position—see the diagram below) to

see the difference in height, then do it again in the piano like before. If the action is otherwise well-regulated and the backcheck is at the proper height, then do it again in the piano like before. If the action is otherwise well regulated and the backcheck is at the proper height and angle, the hammer in check will usually be a little higher than halfway between the hammer at rest and the suspended hammer.

Move up the scale about 10 notes and duplicate the regulation on the first note, using the same visual comparison with the rest hammers and a hammer suspended in the drop position. Check this note with the drag test, and fine-tune the regulation accordingly. Then regulate the backchecks of the notes in between. The three hammer comparison test is the best way I have found to quickly regulate the backchecks for evenness throughout the scale, and it eliminates the need for taking measurements with a ruler.



The highest hammers are being supported by the repetition levers, and the lowest hammers are in the rest position. The hammers at the medium position are in check.

## Step#17: Regulate the Repetition Springs.

There are 3 types of repetition springs in most pianos we come in contact with. The most common today is known as the butterfly spring (sometimes called the Steinway type), which pushes up on the repetition lever at one end, is anchored on the repetition lever post, and extends down to the jack at the other end. This spring has become the universal type of spring because of the effective way that it increases tension on the jack when the hammer goes into check, creating faster repetition. A variation in the spring is being used in some new Renner actions today, called the "Hertz" spring. This is basically a butterfly spring with an adjusting screw where the spring meets the repetition lever.

Next we have what I came to know during my training as the "Renner" style spring. This spring connects to a screw at the rear of the repetition lever, then connects to a silk cord on the jack. This spring also has some of the effect of the butterfly spring, where the tension on the jack is increased when the hammer is in check. The presence of an adjusting screw makes this a pleasant action to regulate.

The last common type of spring in use today is the "American" style, where there are separate springs for the jack and the repetition lever, and an adjusting screw at the top of the wippen near the jack.

Regulation of the repetition springs is straightforward. Play the note so that the hammer goes into check, then release the key just enough to allow the hammer to rise out of check. The speed with which the hammer rises indicates the strength of the spring (all else being equal—how carefully was the action serviced before regulating?). Generally you want the hammer to rise out of check without hesitation, but with very little bump noticeable at the key. A slightly faster rise in the treble than in the bass is acceptable, and is usually desirable.

There are some variables that need to be considered when setting the speed of the hammer rise, however, and here are some guidelines:

- The higher the mass of the hammers, the slower the rise must be to prevent bobbling hammers. This is one reason that the bass hammers should usually rise more slowly than the treble.
- Actions with low friction generally need to have a strong rise with a slight bump detectable in the key. This is because setting the springs for a slow rise will not be strong enough to give good repetition. This is one reason that friction in the repetition lever should not be too low (perhaps a subject for a later article).

Repetition springs do not go out of regulation very much, even after many decades of use. The springs themselves are not highly stressed, the material lasts a long time, and they do not move very much when used. Many times treating other parts of the action for wear (or abuse) will restore the strength of the springs sufficiently for only fine regulation. If you are having to make a major change in the repetition springs, re-evaluate the condition of the action; the centers, knuckles, repetition spring grooves (in the repetition levers), or the weight of the hammers may be affecting the springs

Once you have eliminated the other problems in an action, the repetition springs will need less attention. If you have installed new parts, especially new wippens or hammers, there will usually be a substantial change in the action requiring more spring adjustment. If so, the springs will have to be regulated multiple times, first, as part of the pre-regulation process, they should be rough adjusted, with a little more kick in the hammer than normal. Next, the springs may need a little tweaking while you are working with the repeti-

tion levers and jacks in order to eliminate any overly weak or strong springs. Then the springs will be regulated with more care after the wippens, capstans and backchecks are regulated. This final regulation is the most critical, of course, and will take the most time.

I mentioned in an earlier article the problems of mis-regulated butterfly springs, where the upper part of the spring is bent upward at a sharp angle during regulation, causing a bend in the spring in the upper portion. At first try this seems to be an easy way to gain spring strength quickly, and the spring seems to work better because the spring is moved to a new, possibly cleaner location in the repetition lever slot. In reality, this throws off the relationship between the position of the repetition lever and its effect on the jack tension. There is a ratio built into the butterfly spring between the contact points of the spring on the jack and the repetition lever, and flattening out the curve in the spring or making a sharp bend throws this relationship off. If the springs have been kinked or flattened in the past, the action will perform better if the shape of the springs is corrected before they are regulated.

Next time I will move onto the damper system, with a discussion of damper system traveling, and regulating the damper timing both from the pedal and the key. The relative importance of each of these factors to the pianist will be discussed as well.

## Regulation Checklist

| Regulation Step | Related Items |
|---|---|
| 1. Locate action | Replace stop block cloth. |
| | Repair keyframe at Una Corda lever contact. |
| | Repair/tighten keyframe joints. |
| | Clean & polish keyframe guide pins or springs. |
| | Locate damper action to keys. |
| 2. Bed keyframe | Replace keyframe felts. |
| | Replace key pins. |
| 3. Square and space keys | Key Tops |
| | Key Buttons |
| | Cleaning of key wood |
| | Key bushings |
| | Key balance holes |
| | Backchecks |
| 4. Level all keys | Check, reset case part alignment |
| 5. Space and Travel Action | Action centers |
| a. Travel hammers | Hammer head alignment on shanks |
| b. Space hammers | Space jacks in repetition lever window |
| c. Space whippens | Repetition lever and jack surfaces (Dag, Emralon) |
| d. Travel whippens | |
| e. Travel underlevers | |
| f. Space underlevers | |
| 6. Set action spread | Bolster or replace knuckles |
| 7. Pre-regulate repetition springs | Clean and lubricate spring grooves |
| | Correct spring bends |
| | Replace springs |
| | Inspect/replace silk spring cord (if any) |
| 8. Regulate the jacks to the Knuckles | Align knuckles |
| 9. Regulate the repetition lever height | Check/service wippen, jack, and repetition lever centers. |
| 10. Establish regulating specifications | Make an aftertouch gauge |
| 11. Regulate the letoff | |
| 12. Regulate the capstans | Recheck the repetition lever height |
| 13. Regulate the drop | |
| 14. Regulate the key dip | Recheck the drop, and jack-to-knuckle regulation |
| 15. Regulate the backcheck angle | Check height of backcheck |
| | Backcheck leather |
| 16. Regulate the backcheck | Hammer tail shape, roughness |
| 17. Regulate the repetition springs | Spring shape, bends |
| | Check spring condition (corrosion, etc.) |
| | Clean spring grooves (butterfly style) |
| | Check silk cords holding springs (when applicable) |

# Using The Accu-Tuner To Tune Historical Temperaments

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In 1985 the Sunbury Press published Owen Jorgensen's book *The Equal Beating Temperaments*, which contained fifteen historical temperaments. It was required that these tunings be done aurally; Jorgensen did not publish the settings for electronic tuning. In his later book *Tuning*, he did list the settings for electronic tuning for several temperaments, which was of great help for very accurate tunings of these temperaments.

Recognizing that the use of electronic tuning devices has advanced by leaps and bounds in recent years, particularly Dr. Al Sanderson's Accu-Tuner, I wrestled with the problem of how to calculate and arrive at electronic settings for these tempera ments. Using basic algebra I came to a solution. The purpose of this article is twofold: to give the settings for the Accu-Tuner that will give the Common Model Well-Temperament (Bendeler-Young Composite), a temperament picked almost at random, found on p. 29 of Jorgensen's book; and to show how I arrived at these figures.

To set the Bendeler-Young Composite follow these steps:

Step 1. Set an equal temperament either with the Accu-Tuner or aurally, in which case take a reading of the temperament and store it in the Accu-Tuner.

Step 2. Add or subtract, as indicated, from the reading of the Accu-Tuner, the number of cents indicated in the chart.

The result will be a theoretically perfect tuning of this temperament:

| Common Model Well-Temperament (Bendeler-Young Composite) | |
|---|---|
| Accu-Tuner Note/Octave | Accu-Tuner Change |
| C4 | 0.0 |
| F4 | -2.0 |
| F3 | -2.0 |
| A#3 | -3.9 |
| D#4 | -5.9 |
| G#3 | -7.8 |
| C#4 | -9.8 |
| F#3 | -11.7 |
| F#4 | -11.7 |
| D4 | -6.7 |
| G3 | -2.6 |
| A3 | -10.2 |
| E4 | -8.2 |
| B3 | -11.3 |

I have worked out the Accu-Tuner settings for each of the fifteen temperaments in Jorgensen's book. If you are interested in obtaining a copy, let me know and I'll be glad to supply it. Just send a stamped, self-addressed envelope along with your request.

Now, for those who are interested in the mathematics of it, the following is offered. If you would like to do the calculations yourself, all you need is a calculator that can calculate logarithms and exponents; it helps if it is programmable. If your calculator is not programmable you can use the figures given in the calculations below. A word of caution is in order, however. Due to errors that accumulate in rounding-off, your figures may differ from mine. To minimize this effect I carry the figures out to several decimal places.

To do these calculations you need the following information: (1) the value of a cent, (2) how to find the frequency of a note on the keyboard, (3) how to find the value of an unknown exponent, (4) how to increase or decrease the frequency of a note, and (5) the ratio of musical intervals.

*1. The cent.* The tuning of historical temperaments requires the use of microtones, intervals smaller than a semi-tone. The basic unit is the cent, the value for which is given by

$$\text{cent} = 2^{\frac{1}{1200}} = 1.000578$$

*2. The frequency of a note on the keyboard* is given by

$$2^{\frac{(n-1)}{1200}} \times 27.5$$

where *n* is the number of the note on the keyboard. For example, to find the frequency of A49,

$$\begin{aligned} A49 &= 2^{\frac{49-1}{12}} \times 27.5 \\ A49 &= 2^{\frac{48}{12}} \times 27.5 \\ A49 &= 2^4 \times 27.5 \\ A49 &= 16 \times 27.5 \\ A49 &= 440 \end{aligned}$$

For convenience I offer the following table, which shows the frequency of the notes of the equal temperament:

**Frequency of Notes of the Equal Temperament**

| NOTE | FREQUENCY |
|---|---|
| F33 | 174.614 |
| F#34 | 184.997 |
| G35 | 195.998 |
| G#36 | 207.652 |
| A37 | 220.0 |
| A#38 | 233.082 |
| B39 | 246.941 |
| C40 | 261.626 |
| C#41 | 227.183 |
| D42 | 293.665 |
| D#43 | 311.127 |
| E44 | 329.628 |
| F45 | 349.228 |
| F#46 | 369.994 |

*3. To find the value of an unknown exponent*

If you were asked to solve the following problem

$$2^x = 8$$

which asks the question "2 raised to what power equals 8?" the solution requires the use of logarithms:

$$\begin{aligned} 2^x &= 8 \\ \log 2^x &= \log 8 \\ X^x \log 2 &= \log 8 \\ X &= \frac{\log 8}{\log 2} \\ X &= \frac{0.90309}{0.30103} \\ X &= 3 \end{aligned}$$

*4. To increase the frequency of a note by a certain number of cents* multiply the frequency of the note by $2^{1/1200}$ raised to this number; for example,

$$\begin{aligned} A49 + 1 \text{ cent} &= 440 \times 2^{\frac{1}{1200}} \\ A49 + 2 \text{ cents} &= 440 \times (2^{\frac{1}{1200}})^2 \\ A49 + 3 \text{ cents} &= 440 \times (2^{\frac{1}{1200}})^3, \text{ etc} \end{aligned}$$

Decreasing the frequency of a note by a certain number of cents is done in much the same way:

$$\begin{aligned} A49 - 1 \text{ cent} &= 440 \times (2^{\frac{1}{1200}})^{-1} \\ A49 - 2 \text{ cents} &= 440 \times (2^{\frac{1}{1200}})^{-2} \\ A49 - 3 \text{ cents} &= 440 \times (2^{\frac{1}{1200}})^{-3} \text{ etc} \end{aligned}$$

*5. Interval ratios*

In this exercise it will be necessary to know the ratios of intervals. These ratios can easily be found by examining the harmonic series (i.e., the partial series) that emanate from a vibrating string.

| Interval | Ratio |
|---|---|
| Octave | 2/1 |
| P5 | 3/2 |
| P4 | 4/3 |
| M3 | 5/4 |
| m3 | 6/5 |
| M6 | 5/3 |

There are 13 steps in the setting of the Bendeler-Young Composite temperament. Each of the steps is described below:

*Step 1.* To set the Bendeler-Young Composite Jorgensen dictates in Step 1 that the note F45 be tuned pure to C40. The interval being a P4 (ratio 4/3) means that the fourth partial of the lower note, C40, must have the same frequency as the third partial of the upper note, F45. In equal temperament the frequency of the fourth partial of C40 is 261.626 x 4 = 1046.502; the frequency of the third partial of F45 is 349.228 x 3 = 1047.685. The difference between the two is 1.182, the beat rate that occurs when C40 and F45 are played together. To make them equal we must change the frequency of F45 (throughout Jorgensen's book C40 remains constant). This is done by reducing the frequency of F45 by a number of cents, such that when the new frequency is multiplied by 3 it will equal 1046.504. The equation can be set up like this:

$$3 \times F45 \times (2^{\frac{1}{1200}})^x = 4 \times C40$$

that is, three times the frequency of F45 times 1 cent raised to some unknown power equals 4 times the frequency of C40. The problem devolves into finding the value of the unknown x. This can be done by use of logarithms as described above:

*Step 1 continues next page*

*Step 1 to set the Bendeler-Young Composite temperament continued*

So, take the Accu-Tuner reading of F45, whatever it might be, subtract 2.0 cents (1.96 rounded off), and then re-tune F4 until the lights stop. You will then have a pure P4, C40-F45.

$$3 \times F45 \times (2^{\frac{1}{1200}})^{x} = 4 \times C40$$
$$3 \times 349.228 \times 2^{\frac{x}{1200}} = 4 \times 261.626$$
$$1047.685 \times 2^{\frac{x}{1200}} = 1046.502$$
$$2^{\frac{x}{1200}} = 0.99887$$
$$\log 2^{\frac{x}{1200}} = \log 0.99887$$
$$\frac{x \times \log 2}{1200} = \log 0.99887$$
$$x = \frac{\log 0.99887 \times 1200}{\log 2}$$
$$x = -1.96$$

*Step 2*

Tune F33 pure to C40. The interval being a P5 requires that the third partial of the lower note have the same frequency as the second partial of the upper note:

Take the Accu-Tuner reading of F33, whatever it might be, subtract 2.0 cents, and re-tune F33 until the lights stop. You will then have a pure P5, F33-C40. (You will also have a perfect octave, F33-F45.)

$$3 \times F33 \times (2^{\frac{1}{1200}})^{x} = 2 \times C40$$
$$3 \times 174.614 \times 2^{\frac{x}{1200}} = 2 \times 261.626$$
$$523.842 \times 2^{\frac{x}{1200}} = 523.251$$
$$2^{\frac{x}{1200}} = 0.99887$$
$$\log 2^{\frac{x}{1200}} = \log 0.99887$$
$$\frac{x \times \log 2}{1200} = \log 0.99887$$
$$x = \frac{\log 0.99887 \times 1200}{\log 2}$$
$$x = -1.96$$

*Step 3*

Tune B♭38 pure to F33. The interval being a P4 requires that the fourth partial of the lower note have the same frequency as the third partial of the upper note:

Take the Accu-Tuner reading of B♭38, whatever it might be, subtract 3.9 cents, and re-tune B♭38 until the lights stop. You will then have a pure P4, F33-B♭38. (You will also have a P5, B♭38-F45.)

$$3 \times B\flat 38 \times (2^{\frac{1}{1200}})^{x} = 4 \times F33 \times (2^{\frac{1}{1200}})^{1.96}$$
$$3 \times 233.082 \times 2^{\frac{x}{1200}} = 4 \times 174.614 \times 1.000578^{1.96}$$
$$699.246 \times 2^{\frac{x}{1200}} = 697.668$$
$$2^{\frac{x}{1200}} = 0.99774$$
$$\log 2^{\frac{x}{1200}} = \log 0.99775$$
$$\frac{x \times \log 2}{1200} = \log 0.99775$$
$$x = \frac{\log 0.99775 \times 1200}{\log 2}$$
$$x = -3.91$$

*Next page continues with Step 4*

*Step 4.*

Tune E♭43 pure to B♭38.

Take the Accu-Tuner reading of E♭43, whatever it might be, subtract 5.9 cents, and re-tune E♭43 until the lights stop. You will then have a pure P4, B♭38-E♭43.

$$3 \times E\flat 43 \times (2^{\frac{1}{1200}})^{x} = 4 \times B\flat 38 \times (2^{\frac{1}{1200}})^{-3.91}$$

$$3 \times 311.127 \times 2^{\frac{x}{1200}} = 4 \times 233.082 \times 1.000578^{-3.91}$$

$$933.381 \times 2^{\frac{x}{1200}} = 930.224$$

$$2^{\frac{x}{1200}} = 0.99662$$

$$\log 2^{\frac{x}{1200}} = \log 0.99662$$

$$\frac{x \times \log 2}{1200} = \log 0.99662$$

$$x = \frac{\log 0.99662 \times 1200}{\log 2}$$

$$x = -5.87$$

*Step 5.*

Tune A♭36 pure to E♭43.

Take the Accu-Tuner reading of A♭36, whatever it might be, subtract 7.8 cents, and re-tune A♭36 until the lights stop. You will then have a pure P5, A♭36-E♭43.

$$3 \times A\flat 36 \times (2^{\frac{1}{1200}})^{x} = 2 \times E\flat 43 \times (2^{\frac{1}{1200}})^{-5.87}$$

$$3 \times 207.652 \times 2^{\frac{x}{1200}} = 2 \times 311.127 \times 1.00578^{-5.87}$$

$$622.957 \times 2^{\frac{x}{1200}} = 620.149$$

$$2^{\frac{x}{1200}} = 0.99549$$

$$\log 2^{\frac{x}{1200}} = \log 0.99549$$

$$\frac{x \times \log 2}{1200} = \log 0.99549$$

$$x = \frac{\log 0.99549 \times 1200}{\log 2}$$

$$x = -7.82$$

*Step 6.*

Tune D♭41 pure to A♭36.

Take the Accu-Tuner reading of D♭41, whatever it might be, subtract 9.8 cents, and re-tune D♭41 until the lights stop. You will then have a pure P4, A♭36-D♭41.

$$3 \times D\flat 41 \times (2^{\frac{1}{1200}})^{x} = 4 \times A\flat 36 \times (2^{\frac{1}{1200}})^{-7.82}$$

$$3 \times 277.183 \times 2^{\frac{x}{1200}} = 4 \times 207.652 \times 1.000578^{-7.82}$$

$$831.548 \times 2^{\frac{x}{1200}} = 826.866$$

$$2^{\frac{x}{1200}} = 0.99437$$

$$\log 2^{\frac{x}{1200}} = \log 0.99437$$

$$\frac{x \times \log 2}{1200} = \log 0.99437$$

$$x = \frac{\log 0.99437 \times 1200}{\log 2}$$

$$x = -9.78$$

*Next page continues with Step 7*

*Step 7*

Tune G-34 pure to D-41.

Take the Accu-Tuner reading of G-34, whatever it might be, subtract 11.7 cents, and re-tune G-34 until the lights stop. You will then have a pure P5, G-34-D-41.

$$3 \times G\flat 34 \times (2^{\frac{1}{1200}})^{x} = 2 \times D\flat 41 \times (2^{\frac{1}{1200}})^{-9.78}$$
$$3 \times 184.997 \times 2^{\frac{x}{1200}} = 2 \times 277.183 \times 1.000578^{-9.78}$$
$$554.992 \times 2^{\frac{x}{1200}} = 551.244$$
$$2^{\frac{x}{1200}} = 0.99325$$
$$\log 2^{\frac{x}{1200}} = \log 0.99325$$
$$\frac{x \times \log 2}{1200} = \log 0.99325$$
$$x = \frac{\log 0.99325 \times 1200}{\log 2}$$
$$x = -11.73$$

*Step 8*

Tune G-46 pure to D-41.

Take the Accu-Tuner reading of G*b*46, whatever it might be, subtract 11.7 cents, and re-tune G-46 until the lights stop. You will then have a pure P4, D*b*41-G*b*46.

$$3 \times G\flat 46 \times (2^{\frac{1}{1200}})^{x} = 4 \times D\flat 41 \times (2^{\frac{1}{1200}})^{-9.78}$$
$$3 \times 369.994 \times 2^{\frac{x}{1200}} = 4 \times 277.183 \times 1.000578^{-9.78}$$
$$1109.983 \times 2^{\frac{x}{1200}} = 1102.488$$
$$2^{\frac{x}{1200}} = 0.99325$$
$$\frac{x \times \log 2}{1200} = 0.99325$$
$$x = \frac{\log 0.99325 \times 1200}{\log 2}$$
$$x = -11.73$$

*Step 9.* Tune D42 pure to B*b*38 and then sharpen D42 until B*b*38-D42 beats at exactly the same rate as D42-F#45. This calculation requires two steps. First, set D42 pure to B*b*38:

Take the Accu-Tuner reading of D42, whatever it might be, subtract 17.6 cents, and re-tune D42 until the lights stop. You will then have a pure M3 B*b*38-D42.

$$4 \times D42 \times (2^{\frac{1}{1200}})^{x} = 5 \times B\flat 38 \times (2^{\frac{1}{1200}})^{-3.91}$$
$$4 \times 293.665 \times 2^{\frac{x}{1200}} = 5 \times 233.082 \times 1.000578^{-3.91}$$
$$1174.659 \times 2^{\frac{x}{1200}} = 1162.780$$
$$2^{\frac{x}{1200}} = 0.98989$$
$$\log 2^{\frac{x}{1200}} = \log 0.98989$$
$$\frac{x \times \log 2}{1200} = \log 0.98989$$
$$x = \frac{\log 0.98989 \times 1200}{\log 2}$$
$$x = -17.60$$

*Step 9 continues above*

*Step 9 continues*

$$4 \times D42 \times (2^{\frac{1}{1200}})^{x-17.60} - 5 \times B\flat 38 \times (2^{\frac{1}{1200}})^{-3.91} = 4 \times F\sharp 46 \times (2^{\frac{1}{1200}})^{-11.73} - 5 \times D42 \times (2^{\frac{1}{1200}})^{x-17.60}$$

$$9 \times D42 \times 2^{\frac{x-17.60}{1200}} = 5 \times B\flat 38 \times (2^{\frac{1}{1200}})^{-3.91} + 4 \times F\sharp 46 \times (2^{\frac{1}{1200}})^{-11.73}$$

$$9 \times 293.665 \times 2^{\frac{x-17.60}{1200}} = 5 \times 233.082 \times 1.000578^{-3.91} + 4 \times 369.994 \times 1.000578^{-11.73}$$

$$2642.983 \times 2^{\frac{x-17.60}{1200}} = 2632.764$$

$$2^{\frac{x-17.60}{1200}} = 0.99613$$

Next, sharpen D42:

$$\log 2^{\frac{x-17.6}{1200}} = \log 0.99613$$

$$\frac{x-17.60 \times \log 2}{1200} = \log 0.99613$$

Take the Accu-Tuner reading of D42, whatever it might be, subtract 6.7 cents, and re-tune D42 until the lights stop. You will then have equal beating M3s B♭38-D42 and D42-F#46.

$$x = \frac{\log 0.99613 \times 1200}{\log 2} + 17.6$$

$$x = 10.89$$

$$D42 = x - 17.60$$

$$D42 = 10.89 - 17.60$$

$$D42 = -6.71$$

*Step 10.*

Tune G35 pure to D42 and then sharpen G35 until G35-D42 beats at exactly the same speed as G35-C40. First, tune G35 pure to D42:

$$3 \times G35 \times (2^{\frac{1}{1200}})^{x} = 2 \times D42 \times (2^{\frac{1}{1200}})^{-6.71}$$

$$3 \times 195.998 \times 2^{\frac{x}{1200}} = 2 \times 293.665 \times 1.000578^{-6.71}$$

$$587.993 \times 2^{\frac{x}{1200}} = 585.059$$

$$2^{\frac{x}{1200}} = 0.99501$$

$$\log 2^{\frac{x}{1200}} = \log 0.99501$$

$$\frac{x \times \log 2}{1200} = \log 0.99501$$

Take the Accu-Tuner reading of G35, whatever it might be, subtract 8.7 cents, and re-tune G35 until the light stop. You will then have a pure P5, G35-D42.

$$x = \frac{\log 0.99501 \times 1200}{\log 2}$$

$$x = -8.66$$

*Step 10 continues next page*

*Step 10 continues*

Next sharpen G35:

$$3\times G35\times(2^{\frac{1}{1200}})^{x-8.67}-2\times D42\times(2^{\frac{1}{1200}})^{-6.71}=3\times C40+4\times G35\times(2^{\frac{1}{1200}})^{-8.67}$$

$$7\times G35\times(2^{\frac{1}{1200}})^{x-8.67}=2\times D42\times(2^{\frac{1}{1200}})^{6.71}+3\times C40$$

$$7\times 195.998\times 2^{\frac{x-8.67}{1200}}=2\times 293.665\times 1.000578^{-6.71}+3\times 261.626$$

$$1371.984\times 2^{\frac{x-8.67}{1200}}=1369.935$$

$$2^{\frac{x-8.67}{1200}}=0.99851$$

$$\log 2^{\frac{x-8.67}{1200}}=\log 0.99851$$

$$\frac{(x-8.67)\times\log 2}{1200}=\log 0.99851$$

$$x=\frac{\log 0.99851\times 1200}{\log 2}+8.67$$

$$x=6.08$$

$$G35=x-8.67$$

$$G35=6.08-8.67$$

$$G35=-2.59$$

Take the Accu-Tuner reading of G35, whatever it might be, subtract 2.6 cents, and re-tune G35 until the lights stop. You will then have equal beating between the P5 G35-D42 and the P4 G35-C40.

*Step 11.* Tune A37 pure to F33 and then sharpen A37 until F33-A37 beats at exactly the same speed as A37-D42. First, tune A37 pure to F33:

$$4\times A37\times(2^{\frac{1}{1200}})^{x}=5\times F33\times(2^{\frac{1}{1200}})^{-1.96}$$

$$4\times 220.0\times 2^{\frac{x}{1200}}=5\times 174.614\times 1.000578^{-1.96}$$

$$880.0\times 2^{\frac{x}{1200}}=872.085$$

$$2^{\frac{x}{1200}}=0.99101$$

$$\log 2^{\frac{x}{1200}}=\log 0.99101$$

$$\frac{x\times\log 2}{1200}=\log 0.99101$$

$$x=\frac{\log 0.99101\times 1200}{\log 2}$$

$$x=-15.64$$

Take the Accu-Tuner reading of A37, whatever it might be, subtract 15.6 cents, and re-tune A37 until the lights stop. You will than have a pure M3, F33-A37.

Next, sharpen A37:

$$4\times A37\times(2^{\frac{1}{1200}})^{x-15.64}-5\times F33\times(2^{\frac{1}{1200}})^{-1.96}=3\times D42\times(2^{\frac{1}{1200}})^{-6.71}+4\times A37\times(2^{\frac{1}{1200}})^{x-15.69}$$

$$8\times A37\times(2^{\frac{1}{1200}})^{x-15.64}=5\times F33\times(2^{\frac{1}{1200}})^{-1.96}+3\times D42\times(2^{\frac{1}{1200}})^{-6.71}$$

$$8\times 220.0\times 2^{\frac{x-15.64}{1200}}=5\times 174.614\times 1.000578^{-1.96}+3\times 293.665\times 1.000578^{-6.71}$$

$$1760.0\times 2^{\frac{x-15.64}{1200}}=1749.673$$

$$2^{\frac{x-15.64}{1200}}=0.99413$$

$$\log 2^{\frac{x-15.64}{1200}}=\log 0.99413$$

$$\frac{(x-15.64)\times\log 2}{1200}=\log 0.99413$$

$$x=\frac{\log 0.99413\times 1200}{\log 2}+15.64$$

$$x=5.45$$

$$A37=x-15.64$$

$$A37=5.45-15.64$$

$$A37=-10.19$$

Take the Accu-Tuner reading of A37, whatever it might be, subtract 10.2 cents, and re-tune A37 until the lights stop. You will then have equal beating between the M3 F33-A37 and the P4 A37-D42.

*Step 12*

Tune E44 pure to A37.

$$2\times E44\times(2^{\frac{1}{1200}})^{x}=3\times A37\times(2^{\frac{1}{1200}})^{-10.19}$$

$$2\times 329.628\times 2^{\frac{x}{1200}}=3\times 220.0\times 1.000578^{-10.19}$$

$$659.255\times 2^{\frac{x}{1200}}=656.127$$

$$2^{\frac{x}{1200}}=0.99526$$

$$\log 2^{\frac{x}{1200}}=\log 0.99526$$

$$\frac{x\times\log 2}{1200}=\log 0.99526$$

$$x=\frac{\log 0.99526\times 1200}{\log 2}$$

$$x=-8.23$$

Take the Accu-Tuner reading of E44, whatever it might be, subtract 8.2 cents, and re-tune E44 until the lights stop. You will then have a pure P5, A37-E44.

*Steps continue on next page*

*Step 13*

Tune B39 pure to G35 and then sharpen B39 until G35-B39 beats at exactly the same speed as B39-E44. First, set B39 pure to G35:

$$4 \times B39 \times (2^{\frac{1}{1200}})^{x} = 5 \times G35 \times (2^{\frac{1}{1200}})^{-2.59}$$
$$4 \times 246.941 \times 2^{\frac{x}{1200}} = 5 \times 195.998 \times 1.000578^{-2.59}$$
$$987.767 \times 2^{\frac{x}{1200}} = 978.525$$
$$2^{\frac{x}{1200}} = 0.99064$$
$$\log 2^{\frac{x}{1200}} = \log 0.99064$$
$$\frac{x \times \log 2}{1200} = \log 0.99064$$
$$x = \frac{\log 0.99064 \times 1200}{\log 2}$$
$$x = -16.27$$

Take the Accu-Tuner reading of B39, whatever it might be, subtract 16.3 cents, and re-tune B39 until the lights stop. You will then have a pure M3, G35-B39.

Next, sharpen B39:

$$4 \times B39 \times (2^{\frac{1}{1200}})^{x-16.27} - 5 \times G35 \times (2^{\frac{1}{1200}})^{-2.59} = 3 \times E44 \times (2^{\frac{1}{1200}})^{-8.24} \cdot 4 \times B39 \times (2^{\frac{1}{1200}})^{x-16.27}$$
$$8 \times B39 \times 2^{\frac{x-16.27}{1200}} = 5 \times G35 \times (2^{\frac{1}{1200}})^{-2.59} + 3 \times E44 \times (2^{\frac{1}{1200}})^{-8.23}$$
$$8 \times 246.941 \times 2^{\frac{x-16.27}{1200}} =$$
$$5 \times 195.998 \times 1.000578^{-2.59} +$$
$$3 \times 329.628 \times 1.000578^{-8.24}$$
$$1975.533 \times 2^{\frac{x-16.27}{1200}} = 1962.717$$
$$2^{\frac{x-16.27}{1200}} = 0.99351$$
$$\log 2^{\frac{x-16.27}{1200}} = \log 0.99351$$
$$\frac{(x-16.27) \times \log 2}{1200} = \log 0.99351$$
$$x = \frac{\log 0.99351 \times 1200}{\log 2} + 16.27$$
$$x = 5.00$$
$$B39 = x - 16.27$$
$$B39 = 5.00 - 16.27$$
$$B39 = -11.27$$

Take the Accu-Tuner reading of B39, whatever it might be, subtract 11.3 cents, and re-tune B39 until the lights stop. You will then have equal beating between the M3 G35-B39 and the P4 B39-E44.

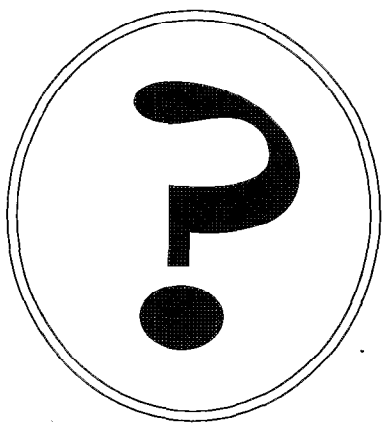
If you followed the calculations with a hand calculator your results might differ from mine by a small amount. This is due to errors accumulated in rounding off. Another source of error is in the accuracy of the setting of the initial equal temperament. Any error in the equal temperament is transferred to the historical temperament.

Let me close by recalling that a real debt of gratitude is owed by our community to Owen Jorgensen who has been a pioneer the study of historical temperaments. His scholarship and industry have opened a new field of study and has elevated our craft to an even more demanding profession, which in turn earns us greater respect from the rest of the musical world.

# An Unusual Encounter

A NON-TECHNICAL REPORT BY
Wilford Young

There was this goat munching on the grass at the residence where I was about to do a tuning. When I got out of my car, the goat came over to greet me. It was friendly and wanted a pat on the head. I pampered it for a moment then proceeded to the front door to ring the bell. My new-found friend followed right along. I pushed the button. The lady answered and upon opening the door saw the two of us standing there at attention.



"Hello there," she said as she leaned over and gave the goat a pat on the head. Whereupon, without hesitation, the goat walked right past her, into the house, up the stairs and into the fine-carpeted living room. The lady commented, "That surely is a cute mascot you have there." Her voice had a bit of anxiety to it.

I replied, "Lady, that's not mine, I thought it was YOURS!" Her voice was beginning to rise in pitch. Violinists call it seventh position. "NOT YOURS?" she exclaimed, "OH, GOOD HEAVENS." She ran up the stairs where she found her little five-year-old boy making friends with it already.

"Out, out! Timmy, it has to go out! Take it out in the backyard. You can play with it there." The goat, always looking for more adventure, was accommodating. It went along with the little boy. I got out my tools and began working on the piano.

Out in back, however, there began to be such a commotion—all the neighborhood dogs had become aware that a strange looking creature had intruded their domain. They were jumping up and down along the fence lines making considerable racket. The goat in the meantime, had jumped up onto the picnic table and while doing sort of a dance, seemed to be announcing, "I am king of bunker's hill."

I told the lady that with all this noise going on, tuning the piano would take considerably longer than usual.

She mediated on it for a bit then decided to have her boy bring the pet back into the house. In the meantime, she would be phoning the neighbors to see if she could find the owner. The little boy didn't care if it was inside or out, he was having fun.

Again, I settled down to get the tuning done. The lady was not having any luck in finding the owner. The goat just seemed to have dropped in from nowhere.

I was in the middle of fine-tuning an octave when the lady gave out a shrill cry, "This goat has got to go!"

It had jumped onto the French Provincial coffee table to better see out the front window. She told her boy to hold onto the creature while she called the animal control office. She hated to do this, however, because it would mean the owners would have to pay a considerable fee to retrieve it.

But it had to be done—no more fooling around! The men came in a truck. The goat didn't want to loaded into this strange vehicle. The crew were having their problems. But after much kicking and fussing the goat was hauled off. Then, wouldn't you guess, ten minutes later the real owner called. He wanted to come and pick up his goat. The lady told him the sad news and where he could find it. He was happy, though. Now he knew where the animal was.

I was almost through with my tuning job when the phone rang once more—it was the goat owner again. He said to tell the piano tuner to call him and make an appointment to do his piano also. "Tell him thanks, for being so nice to my goat."

I think this would qualify as my most unusual solicitation.

# The Tuner

By Paul Monroe, RPT

A continuing series directed to the Associate working toward RPT status. The subject of the last three articles was "setting the temperament." This article will be tuning the octave, a part of tuning that bears as much attention and accuracy as setting a temperament.

I want to briefly mention a much—discussed subject before getting into the meat of octave tuning and that is "inharmonicity." It is something you will have to deal with in every piano you tune.

You may recall one of the previous articles where the subject of partials was discussed and that a piano string when struck, breaks up many different frequencies called partials. Inharmonicity has to do with the second partial. It is usually sharp to the fundamental, i.e.: the first partial of A3 equals 220HZ. Theoretically the second partial should be 440HZ. Due to inharmonicity it will be more than 440HZ. Depending on the amount of inharmonicity it may be 440.2HZ.

You can easily see where this may cause you a problem when you try to tune your octaves perfect with no beats. If you want to know more about this phenomenon, attend a seminar or convention where the experts can talk to you in detail. Now on to octave tuning.

When you completed the temperament octave described in the last article, you tuned the octave F3-F4. Next, rough in or quickly tune E3 to E4 continuing to tune each octave to the bass-tenor break. That is where the wound strings start to cross over the strings in the middle section of the keyboard. This area varies from one piano design to another. On some spinets F3 is the bottom note in the tenor section and in some grands B2 is the bottom note in the tenor section.

Notes on the C8 side of the strut or under the capo bar in a grand I call the treble section. Between the overstrung bass and this strut or capo bar, I call the tenor section.

Let us move on to tune the octave F#3-F#4. Play the octave as you turn the tuning pin. Do not turn a tuning pin without listening to an audible tone. It helps you know what you are doing.

When you feel you have the pin where it belongs, start using your test intervals. Use the 3rd-10th test where the 10th should be slightly faster than the 3rd. Check the even beat rate progression of the M3rds and the M6ths. If you want to try a little more advanced testing, try the 6th-10th test.

This test is to check the 5th interval to make sure it is contracted. If you are tuning F#4 to F#3 and you want to check the 5th, B3-F#4, the note to play is the 10th below F#4 and the 6th. This test is also a good vehicle to control the stretch in the treble section.

Continue tuning the next octaves. You will probably notice that about A4 you will lose the use of the tests for even progressing 3rds and 6ths as their beat rate is too rapid to discern. When this occurs start using the 10th interval to check the even progression of beat rates in intervals such as F3-A4, F#3-A#4, G3-B4 etc., etc.

As you continue up the keyboard you will be able to start using another test interval at C5, which is C5-F3, called a 12th. By description it is 5th plus an octave, the 5th being F3-C4 adding the octave which is C5. For this interval there should be no objectionable beat rate. At most a slow roll.

When you arrive at the point of tuning F5, you can add another test interval, the 3rd-17th test. This replaces the 3rd-10th test interval when the beat rate has become too rapid. Tuning F5 to F4, compare the M3rd, C#3-F3 to the 17th, C#3-F5. Again the 3rd should be slower than the 17th or the 17th should be faster than the 3rd. With the use of the 3rd-17th and the 12th test intervals, tune through C6.

At this point you can change from the use of the 12th interval to an interval of a 19th. A very simple change. It is the same note name as used in the 12th except an octave lower, i.e.: 12th=F4-C6, 19th=F3-C6.

Keeping things simple from C6 through C8, use the octave for tuning and turning the tuning pin, check it with the double octave, 17th and 19th test intervals.

When you start turning the tuning pin there is a phenomenon you can utilize in the top of the treble section to help you get close to where you want the octave to be tuned. If the note you are tuning is below the pitch you desire, and it usually is, listen closely as you start to increase the tension and raise its frequency. As you approach the desired point, the volume of the note you are tuning becomes louder. This is due to the amplication of the partials in the octave. By definition, if you have two of the same frequencies playing at the same time, (in sync), they will be louder than just one. When the coincidental partials contradict or cancel out each other the volume is reduced. So when you are tuning the octaves and the partials sound like they are in sync, utilize the 17th and 19th test intervals to check your accuracy.

A word of caution. It is possible to pass the point where the note should be tuned and pass on into another set of coincidental partials that make the note sound louder. This is where the 17th and 19th test intervals can be of great value.

A quick review on what you should be hearing, remembering that what you hear varies from piano to piano, so the following statement is a generality.

Tenor octaves: usually pure to a slow roll of 1 BPS

Treble octaves: expanded possibly to 2-3 BPS

10th & 17th intervals: moderate beat rate increasing in speed as you progress up the keyboard.

12th & 19th intervals: pure interval to one with a slow roll.

The next topic is going to be tuning the bass section but before that, I feel it is important for the beginner to go back and re-read this article up to this point. Write a summary, go to the piano and start tuning. Writing sometimes helps you to intern information faster. This method will also help you follow rules #1 and #2 and you won't have to utilize rule #3. If you didn't read these rules in my previous article, they are: Rule #1 - Know what you are doing. Rule #2 - Know why you are doing it. Rule #3 - If you don't know the answers to #1 and #2, ask questions.

Due to space limitations, octave tuning will be continued in the next issue. Remember, practice-read-practice and practice some more if you expect what you read to benefit your career in piano tuning.

# Techno-Stuff

By Richard Anderson, RPT
*Feature Writer*
*Chicago Chapter*

You can rarely use parts just as they come from the box, part 2.

The most common cause of noisy, sluggish trapwork is poorly finished and fitted parts compounded by the application of graphite paste. It's possible, and desirable, to assemble trapwork that will work quietly and freely for years without any lubrication. All that's necessary is that the parts be clean, smooth, and assembled carefully.

Clean all parts.

Remove all traces of graphite paste or other lubricants by scraping off heavy deposits and then washing off with xylene. Keep xylene off finishes; it's powerful stuff, and flushes away graphite paste like magic, even from graphite paste-impregnated cloth and buckskin.

Smooth metal parts.

The worst offender is leaf-type trap and action return springs. The process of forming the curve where the spring bears against the lever or keyframe produces a concave cup in that curve. The sharp edges of the spring will then cut grooves into the wooden part. This concentration of all the friction into the small surface area of the groove is what causes all the squeaks, squawks, and sluggishness. The application of graphite paste compounds the problem. The sharp edges of the spring quickly cut through the paste and push it to the side further exaggerating the groove, and providing additional resistance to movement.

Surfacing and polishing the bearing curve will eliminate this problem. It was standard procedure in piano factories years ago, but even factory finishing can usually be improved. Remove the cup and sharp edges by holding the spring against a stationary belt sander and rotating the part along the curve until the sander is making contact with 100% of the surface of the curve. This spreads the force over the maximum surface area of the lever and reduces the friction per surface area. Safety note—don't grind metal on the same belt sander you use for wood. Sparks from the metal can ignite wood dust inside the sander.

Next, polish the surface of the curve on progressively finer wire wheels, and finally on a buffing wheel. Polish to a mirror brightness. The more polished the part, the less friction you'll have, and longer the part will stay clean.

Similarly, the action shift lever is usually surfaced at the factory with a convex shape in the horizontal direction to allow the action to slide in and out past the lever. Most often this also results in a concave shape in the vertical direction, or a hook edge where the lever bears against the bottom of the key frame. Remove this hook edge and polish this bearing surface also. Hinge pins and other metal parts should be free of burrs and similarly treated.

Smooth wood parts.

Smooth and burnish trap levers and keyframe ends where springs bear by scraping with a single-edged razor blade until all traces of the spring grooves are gone. Sand or scrape the keyframe slot where the shift lever bears to remove any groove caused by the hook edge of the shift lever.

Shape dowels on your "wood only" sander to have ends that are square with slightly rounded edges, and free from saw cuts. Polish the dowels by sanding the entire surface by hand to 220 grit, then burnish the dowel by rubbing it with your fingers.

For wood parts that bear against another wood part, example Steinway sostenuto levers, make sure the parts are free from saw cuts and other marks, and have no sharp edges.

Test individual parts as you install them on the piano by applying resistance at the appropriate place and moving the part. Check for smooth, quiet operation and proper alignment. By testing each part as you go along, problems can be identified immediately, and fixed without back-tracking. Remember, don't use any lubricants. Lubricants aren't necessary, just mask a problem, and eventually make the problem worse by attracting dirt. If you have a problem during assembly it's because something isn't clean or smooth enough.

When replacing buckskin, use the best material available. If you must use buckskin that has a grain, orient the grain perpendicular to the line of travel so that the part isn't going against the grain in either direction.

The time spent finishing trapwork in this fashion will result in better performance, years of trouble free operation, and elimination of the dreaded "piano droppings" on your customers' white carpet.

PTG Review
Dedicated To PTG News • Interests & Organizational Activities
PIANO TECHNICIANS GUILD

# Business Resource Manual Available Now

## What is the Business Resource Manual (BRM)?

Let me say first that it is not a text book of generic marketing, nor a showpiece without substance. It *is* designed specifically for piano technicians who want to make and keep their service businesses successful. It *is* user-friendly with solid, useful information that won't bog you down, and it contains lots of art and copy to make your direct mail, newsletter, press release and advertising projects easier. Interested? Let's take a quick tour through the table of contents.

## I. Planning For A Successful Business

This is really an introduction to the manual, getting you to think about your business, and explaining how you can make it more successful by evaluating it, setting goals, and utilizing the various resources provided, from sample newsletter and direct mail pieces, to camera-ready piano clip art.

## II. The Marketing Process

This section first defines marketing in a way that is applicable to piano technicians; explains marketing objectives, that is, deciding exactly what you want to do to keep your business successful; explains about target audiences and lists various types of people and groups that you likely are trying to reach; and talks about the "message" - the information you likely want to relay in your advertising and promotion efforts.

## III. PTG Marketing Tools

A review of all the tools available through PTG to help you promote your business, and recommendations for using these tools to educate your clients about piano care, PTG and RPTs, and using the RPT credentials to position yourself as a piano service professional committed to high standards.

## IV. Outgoing Communications

This section discusses and explains direct mail: reminder cards for repeat business, letters of introduction, and newsletters. Included are sample direct mail pieces like client letters and letters of introduction, and over thirty newsletter articles, interviews and shorts.

## V. Community Relations

As the heading suggests, this section explains the benefits of forming a relationship with your community, that is, getting involved with community activities so that people find out about you, and how to both serve your community and promote your business in doing so. Many ideas are presented to help you get started in community relations, or to expand what you do now.

## VI. First (And Second) Impressions

Customer relations - how to make a good first impression, and how to avoid making a poor impression. And, take an eye opening quiz to see if you need to improve your customer relations.

## VII. Eighty-eight Keys To Improving Your Business

Consider this PTG's version of the "Top 100" marketing tools, or tips, for promoting your business. You might recognize many things you are doing now, but you might also be surprised at what you're not doing!

## VIII. Activities And Events

This section includes testimonials from PTG members - innovative business ideas, techniques and events that reach the public, educate them, and let prospects know about their services.

## IX. Public Relations - Generating Exposure

An overview of generating publicity in the media, like newspapers, magazines, radio and TV, and some specifics on news releases, how to prepare them, and finding out the best way to get a release placed, with emphasis on the print media.

## X. Setting Marketing Goals

This section reminds us of the importance of setting goals. A sample marketing goal planner illustrates weekly, monthly and yearly goals that provide a model to work from. This is followed by "MY" Marketing Goal Planner, blank for you to fill in with your own goals, then keep close at hand and review often.

*Continued on page 50*

# P A S S A G E S

## *In Memory*

**William N. Reid**
**July 21, 1917**
**May 10, 1994**

In the last 60 years, William N. Reid has built, rebuilt, regulated, tuned and lovingly cared for numerous organs and pianos throughout the West. Mr. Reid died at home in Santa Clara, California, on Tuesday, May 10, 1994, of cancer. He was 76. A native of Santa Cruz, California, he attended Santa Cruz High school and San Jose State College. While in high school, he apprenticed with organbuilder John Swinford of Redwood City, California. This experience brought him in contact with many of the famous organists of the day and most of the fine pipe organs in churches in the San Francisco Bay area.

He did business as Reid Organ Company representing Hillgreen-Lane Organ Company of Alliance, Ohio. His work tuning, repairing, and rebuilding took him into California, Oregon, and Washington.

Since 1969, he specialized in fine piano rebuilding. From 1972 to 1993, he owned and operated Piano Mart, Inc. He particularly enjoyed restoring Ampico and Duo-Art player pianos.

Whether it was for an organ or a piano, William N. Reid applied his musical and mechanical talents to the job. He was generous in sharing his knowledge with apprentices and co-workers in the trade. Music lovers appreciated the loving care he devoted to these instruments. Mr. Reid was active in local musical organizations, being past-president of the local chapter of the Piano Technicians Guild and past-dean of the American Guild of Organists chapter.

He is survived by his wife, Ruth, and their four children: Kathy Harvey of Montara, Patti Davis of Atascadero, Ann Reid of Santa Clara, Jon Reid also of Santa Clara, and six grandchildren.

**Francis Manricks**
**February 18, 1913**
**March 18, 1994**

Francis was waiting for his bus en-route to his tuning customer when he collapsed and died of a massive hear attack. Francis first started in the business of piano tuning as an apprentice to his uncle, working in Rangoon, Shanghai, and Goa, India where he set up a shop, rebuilding and tuning pianos. Francis gained fame as concert tuner to many prestigious pianists and musical artists. The year 1975 saw Francis reluctantly dispose of his properties in India and emigrate with his complete family to Canada. He became chief tuner for McGill University, Montreal. While continued to tune for demanding and prestigious artist, Francis remained a diplomat and a gentleman with a friendly greeting for all. He was also an honest God-fearing man and a good friend. He is sadly missed.

***Lloyd Wagner***

**Roger A. Hamilton**
**November 13, 1924**
**April 25, 1994**

Roger A. Hamilton was born and raised in Sheldon, Iowa. He graduated from high school in 1942 and served three years in the Army Air Force, including two years in Europe during WWII.

On September 2, 1946, he married Ann Victoria. He attended Sheldon Junior College and graduated from Morningside College in Sioux City in Nebraska. He studied for his doctoral progam at the Louisiana State University at Baton Rouge. He retired from teaching in 1978 but continued as a professional piano tuner. Mr. Hamilton passed away in Surprise, Arizona at the age of 69. He was a member of the Piano Technicians Guild and many other service organizations. He is survived by his wife, Ann; two daughters, Susan Hamiliton Brown and Sally Hamilton Rewinkel; a son, Tom Hamilton; seven grandchildren, his mother, and two brothers.

## *Reclassifications to RPT*

**MAY, 1994**

**Region 1**

**021-BOSTON, MA**

VICTOR J. BELANGER
196 HAMPSHIRE STREET
CAMBRIDGE, MA 02139

RIA D. KITTAY
1409 RIVER STREET, #32
HYDE PARK, MA 02136

**031-NEW HAMPSHIRE**

JAMES T. HERRICK
80 1/2 S. STATE STREET
CONCORD, NH 03301

**Region 2**

**301-ATLANTA, GA**

JOHN M. BLICK
787 HOUSTON-MILL ROAD, NE #4
ATLANTA, GA 30329

DAVID N. LUTES
2494 WILLIAMS LANE, #6
DECATUR, GA 30033

**Region 3**

**752-DALLAS, TX**

DARREN L. SPEIR
3124 ANDREA
DALLAS, TX 75228

*Manual* continues from page 48

## Appendix

This includes the following: a professional organizations listing; sample news releases; samples of media coverage; PTG materials order forms, sample answering machine messages; sample classified ad; sample direct marketing coupon; sample flyer; 10 year index of *Journal* business articles; miscellaneous resources, and a generous supply of generic piano clip art.

In addition, RPT members get an extra section of camera ready business forms, including billing forms and contractual forms.

This manual will be similar to the PTG Source Books, in loose leaf format, which will enable you to update it as new items become available. It will also allow you to re-insert replacement pages of camera-ready clip art or forms, and to supplement with materials of your own. For example, The BRM would be a good place to keep the Graphic Standards Manual and other camera-ready materials you may already have. Look for future articles from the Marketing Committee that will provide an in-depth analysis to help you get the most use of this manual.

If you are going to the PTG International Convention at Kansas City in July, you can see it there and purchase without the shipping charges. Or, call the Home Office to order after the convention.

***Keith Bowman, Chairman, Marketing Committee***

**Chapters & Regions**

**If you have articles and success stories centered around workshops, conferences or Chapter *PACE* programs, send them to PTG Home Office 3930 Washington, Kansas City, Mo 64111**

# Associate Gets High Score

At a recent chapter meeting, the members of the South Central PA Chapter used the written exam, followed by a discussion period, as a meeting technical. From a decision that it was time to administer the test to our Associates came the idea for our RPTs also to participate. Our examining committee scored the Associate exams, and the RPTS were permitted to score their own. This turned out to be a great idea as it was a lot of fun, and also provided some additional benefits we weren't expecting.

The big surprise was who got the highest score—one of our Associate members! Mild embarrassment from RPTs was greatly outweighed by pride in seeing the result of diligent study.

Your chapter might want to consider trying this idea, whether at your regular meeting or at some special time that works best for your members. Here are the benefits we received from our experience.

- With everyone taking the exam, the atmosphere was more relaxed and the pressure on Associates was alleviated somewhat.

- The RPTs found this to be a good self-evaluation and also a gentle reminder of what is expected of our newer members who are on the "RPT track."

- Discussion of the exam results helped RPT mentors to assess the weak areas that Associates need to work on.

- Our post-exam discussion turned into a very lively debate over tuning theory, regulation philosophies, even challenges of some of the exam questions!

- As a result of our discussion, debate and assessments, we identified at least three topics that will be used as future chapter technicals.

- And as I said earlier, this was just plain fun. Try it!

***Keith Bowman***
***South Central PA Chapter***
***President***

# A Small gift For Horowitz

A few years ago when just starting out playing around with the "Steinway Hammer Birds," I gave one to Jeanette Hedwall, manager of Sherman Clay at that time.

Franz Mohr was to be the special guest at the annual Sherman Clay Dinner and Jeanette asked if I could create a small memento along that line, to present to him for the occasion as a token of our appreciation for his afternoon technical session. I came up with some "hammer birds" — carved from vintage Steinway hammers mounted on a piece of Steinway pin block from the 20s and three tuning pins from the "Opera House Steinway Upright." This was presented to Franz at the dinner and it was received with much emotion and a "Franz Mohr old-country type hug." A sense of closeness with him was felt throughout the evening.

On April 8, 1994 he returned for another seminar and related a follow-up on "the birds." In October of 1989 Franz was invited to a birthday party for Vladimir Horowitz. He wanted to give the maestro a gift that would be different and appropriate to the occasion and so decided to present to him the little memento that we, the Seattle piano technicians, had given to him.

The maestro was so taken with the gift that it seemed to overshadow the many other expensive gifts in front of him. Many times during the party Horowitz admired and caressed it and afterwards it was taken to his apartment. Maestro Vladimir Horowitz passed away a month later.

Little did we know how we would touch the lives of Franz Mohr and Vladimir Horowitz by giving that small gift at the Sherman Clay dinner in 1987. Little things can and do mean a lot.

***Bill Smith, RPT***

# Indianapolis Chapter Presents Seminar

Those technicians who attended the "Everyday Voicing" seminar April 9th in Indianapolis came away with a much better understanding and appreciation for the art and science of voicing. Clinicians Bob Davis, RPT, and Dale Erwin, RPT, provided an in-depth, thought-provoking look at both the theory and the application required to master this complex subject.

The one-day class was equally divided between concepts, techniques, and demonstration. Bob and Dale skillfully guided the class through the process of making both subtle and dramatic changes in tone, dynamics, and sustain. All in all, an excellent class!

Those of you who plan to attend the convention in Kansas City should put this class on your must see list! It will set the "tone" for your whole convention.

***Bill Scharbrough, RPT***

*Chapters and regions who offer seminars and regionals are invited to send articles and success stories for publication consideration in the Piano Technicians Journal Review. All articles submited will be considered. Send your information to PT Journal, Managing Editor, 3930 Washington, Kansas City, MO 64111-2963.*

# EVENTS CALENDAR

All seminars, conferences, conventions and events listed here are approved PTG activities.

Chapters and regions wishing to have their function listed must complete a seminar request form. To obtain one of these forms, contact PTG Home Office or your Regional Vice President.

Once approval is given and your request form reaches Home Office, your event will be listed through the month in which it is to take place.

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

**July 6-10**
***37th Annual PTG Convention and Technical Institute***
Hyatt Regency Crown Center/Kansas City
Contact: PTG Home Office
3930 Washington
Kansas City, Missouri 64111-2963
Phone: 816-753-7747
Fax: 816-531-0070

**September 24**
***Pomona Valley Annual Seminar***
Claermont Methodist Church
Contact: John Voss
2616 Mill Creek Road
Mentone, CA 92359
909-794-1559

**October 6-9**
***Ohio State Conference***
Cleveland, Ohio
Contact: Kevin or Janet Leary
18817 Hilliard
Rocky River, Ohio 44116
216-331-5605

**October 13-15**
***New York State Conference***
Sheraton Inn
Syracuse, NY
Contact: Paul Kupelian
PO Box 162
Constantia, NY 13044-0162
315-623-9484

**October 27-30**
***Texas State Association***
Sheraton Inn
Wichita Falls, TX
Contact: Dale Probst
4447 Cunningham
Wichita Falls, TX 76308
817-691-3682

**November 3-6**
***North Carolina State Conference***
Radisson Hotel/High Point, NC
Contact: Evelyn Smith
1041 S. Aycock Street
Greensboro, NC 27403
919-230-1783

# New Members In May

### Region 1

**021-BOSTON, MA**

MICHAEL J. COLLINS
11 LILAC STREET
EXETER, NH 03833

FREDRICK J. MUDGE
16 YORK TERRACE
BROOKLINE, MA 02146

**031-NEW HAMPSHIRE**

HANS STAFFORD
P. O. BOX 296
TAMWORTH, NH 03886

**061-OTTAWA, ON**

JEAN POULIN
6817 NOTRE-DAME
ORLEANS, ON K1C 1H4
CANADA

**062-TORONTO, ON**

GEORGE J. BLAND
417 DUPONT STREET
TORONTO, ON M5R 1W3
CANADA

**064-CONNECTICUT**

WILLIAM D. PELTO
105 WHITING ROAD
E. HARTFORD, CT 06118

**190-SOUTHEASTERN PA**

P. STEVEN WOLFE
P. O. BOX 2
WASHINGTON CROSSING, PA
18977

### Region 2

**301-ATLANTA, GA**

GARRETT R. MCCHESKY
1041 STEPHENSON ROAD
STONE MOUNTAIN, GA 30087

WILLIAM H. SCHUENEMAN
209 LEXINGTON DRIVE
WOODSTOCK, GA 30188

**395-MISSISSIPPI-GULF COAST**

WILLIAM B. MIXON
1409 POST ROAD
CLINTON, MS 39056

### Region 3

**722-ARKANSAS**

RANDAL L. CARR
5401 WALNUT ROAD
N. LITTLE ROCK, AR 72116

**752-DALLAS, TX**

NORBERT F. LESJAK
10485 DUNAWAY DRIVE
DALLAS, TX 75228

### Region 4

**445-YOUNGSTOWN, OH**

KEITH M. HAMILTON
838 DRYDEN AVENUE
YOUNGSTOWN, OH 44505

**467-INDIANA**

LARRY R. MERRIMAN
3706 ROBINWOOD DRIVE
FORT WAYNE, IN 46806

**481-DETROIT-WINDSOR, MI**

ALEXANDER HANWAY
2059 ASCOT
ANN ARBOR, MI 48103

**481-DETROIT-WINDSOR, MI**

ALAN W. WICKMAN
10072 S. SAGINAW RD.
HOLLY, MI 48442

**537-MADISON, WI**

JEREMY G. NEFF
7822 BLUE VALLEY DR., S.
EAU CLAIRE, WI 54703

**600-WAUKEGAN, IL**

ALICE G. ALVIANI
425 MCALISTER AVE.
WAUKEGAN, IL 60085

### Region 5

**571-SOUTH DAKOTA**

WENDY J. POTTER
BOX 326
BALATON, MN 56115

**641-KANSAS CITY, MO**

EDWARD DUFRAIN
RR 4
MARYVILLE, MO 64468

**803-BOULDER, CO**

DANIEL M. ROE
4494 ABERDEEN PLACE
BOULDER, CO 80301

### Region 6

**905-SOUTH BAY, CA**

WALTER L. NIRENBERG
522-C OBISPO AVENUE
LONG BEACH, CA 90814

**951-SANTA CLARA VALLEY, CA**

HOWARD FREDERIC
1599 ORIOLE AVENUE
SUNNYVALE, CA 94087

### Region 7

**011-VANCOUVER, BC**

MICHAEL ALTSHULER
1020 W. 71ST AVE., #4
VANCOUVER, BC V6P 3A6
CANADA

**011-VANCOUVER, BC**

EDDIE M. JAUOD
5480 PATTERSON AVE.
BURNABY, BC V5H 2M5
CANADA

**012-VANCOUVER ISLAND, BC**

JULIE M. WALLACE
315 PARKWAY ROAD
CAMPBELL RIVER, BC V9W 5K3
CANADA

**841-SALT LAKE CITY, UT**

RICHARD A. SAUNDERS
3432 S. 575 W., #A
BOUNTIFUL, UT 84010

**985-PUGET SOUND, WA**

LEE R. HACKER
608 1/2 9TH STREET
BREMERTON, WA 98310

## PTG Marketing Tools

**Brochures:**

- How should I take care for my piano?
- How often should my piano be serviced?
- Special care and maintenance of the teaching piano.

*50/$20, 100/$35, 500/$150*

**Technical Bulletins:**

- Pitch Raising
- Regulation
- Humidity Control
- Voicing
- Finish Care
- Rebuilding

*50/$12, 100/$20, 500/$90*

## Educational Materials

- PTG Technical Exam Source Book
- PTG Tuning Exam Source book

*$29 each*

## Merchandise

- Journal Binders

*1/$6.50, 2/$12*

- Membership Lapel Pin *

*$5.00*

- PTG Gray Tie

*$15.00*

- PTG Blue Luggage Tag-Embossed

*$3.00*

- Coffee Mug

*1/$4.00, 4/$13.00, 6/$22.00*

- Pedestal Mug-10 Oz. clear

*$1/$5.00, 4/$16.00, 6/$22.00*

**RPTs Only*

**To place your order for any of these items call 816-753-7747**

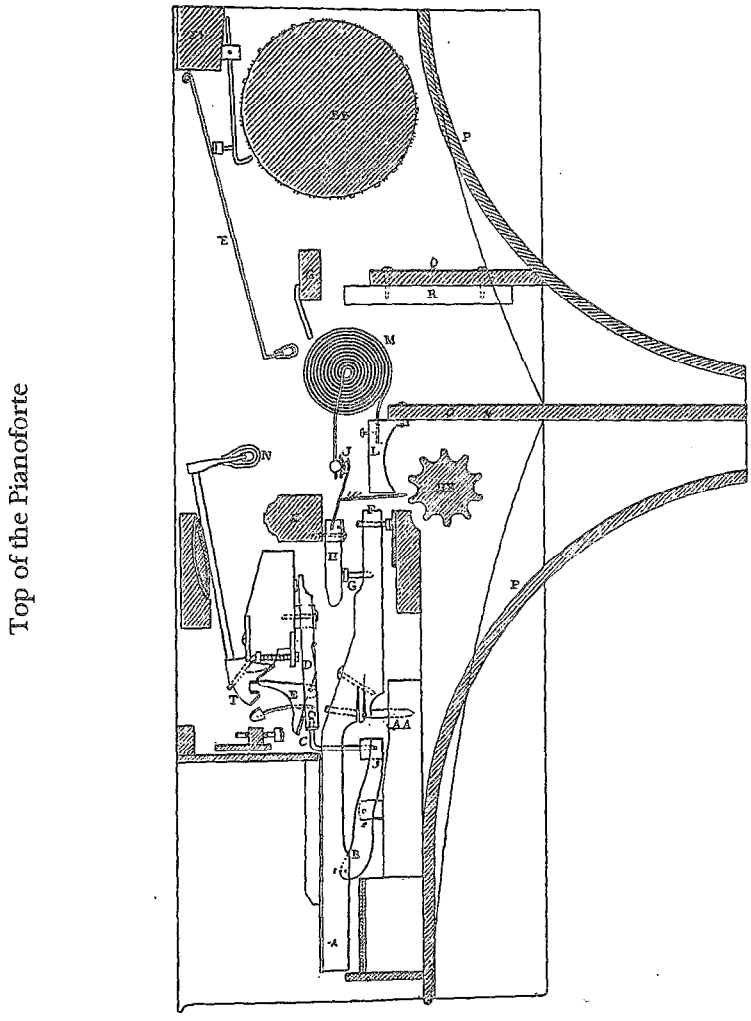
*Reminder cards or Business cards also available from PTG*

## PTG Foundation
### *Mission Statement*

*"The Piano Technicians Guild Foundation is formed to support the goals of PTG by preserving and displaying historical materials and providing scholarships and grants for piano performance, study and research."*

# *Foundation Spotlight*

***Pianoforte with 'Continuous Sounds'. Pape, 1834***




From the book *Old Pianos* by N.E. Michel (Revera, California, 1954). This volume, part of the library of William Braid White, was donated to the Piano Technicians Guild Foundation Museum and Archives by Fred Odenheimer.

As part of its adopted mission—"...to participate in the preservation of resource materials..."—the PTG Foundation has taken on the challenge of accumulating an archive of materials in piano technology, as well as a facility in which those materials can be displayed and used. If you have historical materials that you would like to donate to the Foundation, please contact Bruce Dornfeld, RPT, 2134 Walters Avenue, Northbrook, IL 60062.

If you wish to support this important effort financially, please send your contributions to the Piano Technicians Guild Foundation, 3930 Washington, Kansas City, MO 64111-2963.

## Case Study:

## The Urban Technician

*Just as each piano is different, every piano technician has his or her own ways of organizing life, work and business. In this department, we'll take a look at a different aspect of the profession each month. Curious about how the other half lives? Is there something you think other members might be interested in hearing about? Tips and suggestions will be gratefully accepted. Just send them to the Home Office and we'll get on the beat!*

In most places, getting to the next stop is simply a matter of jumping into the car and hitting the road. A car also gives us the luxury of taking along large, heavy items that we might not even need. But what if you worked in one of the most densely populated cities in the world, New York City? What if you didn't even own a car?

Evan Giller, who lives and works in Manhattan, says it's a matter of planning and scheduling. "I'm getting good at scheduling," he said. "I schedule appointments in the same immediate neighborhood so I can stay within a 10- or 15-block area throughout the entire day."

Giller's preferred way to travel is by foot. He straps his kit to a luggage cart, and walks from one appointment to the next. "Walking is the best, especially when the weather is nice. That allows me to get a little bit of fresh air, although in New York City, fresh air is not always that fresh." To get to the neighborhood where he'll be working that day, he travels by cross-town bus, taxi or subway.

"Subway is often my first choice because it's much faster than a cab some times of the day. It's not that pleasant, but it works."

For Karl Roeder, who works for Steinway & Sons as a concert tuner, a bicycle is the favored form of transportation. Trains are often delayed, and taxis have a tendency to run into gridlock in Manhattan's crowded streets, he said.

"I went to a bike shop and bought basically the cheapest bicycle in the shop. It's good enough to be durable, but not so good that it attracts attention. I have a luggage rack installed on it, and I fasten my case to it with bungee cords.

"You have to keep your bicycle relatively clean, so you look presentable. And if it's a very, very hot day, you have to allow enough time so that you get there without perspiring heavily," Roeder said. He said he'd seen an article on an old *Journal* which stated that showing up for appointments on a bicycle doesn't present a professional image. In an urban area, however, clients never see the bicycle because it's chained to a post on the street.

Roeder has been in New York about four and a half years, after working as a dealer technician in Tallahassee, FL, and Macon, GA, both relatively rural areas compared with New York.

"I was driving 40,000 miles a year. It was quite a change of pace. I miss having the rolling piano shop. I had a pickup with a camper shell, and I could effect most repairs on the spot. It was a lot easier to get things done in a single visit."

Getting organized for his day's work is somewhat easier for Roeder because since he works mostly in concert venues or recording studios, he does relatively little repair work. Instead, his work involves tuning, regulating and minor action repairs.

"Over a period of years, I've been paring down my kit. This week, in fact, I went to a Lands-End briefcase. There's a legend of a tuner here at Steinway who walked around with only a mini-tuning hammer, a couple of mutes and a screwdriver. If a job took more than that, he'd have to go back later," Roeder said.

A lightweight kit is a definite plus for Roeder, who says he also carries 18 to 20 pounds of chains and three different locks to secure his bicycle while he's working.

For Giller, who does more in-home service, scheduling and familiarity with his clientele are the keys to keeping his load manageable. "I change my case daily, depending on where I'm going and what I'm likely to encounter. I pretty much know the pianos I'm servicing. If it's a new client, I will spend more time on the phone asking basic questions about the instrument: if there are any problems, whether it's been tuned recently. If they don't know if there are problems or when the piano was last tuned, we're pretty much talking about a second trip anyway," he said.

"I have a stringing kit with all my stringing tools, so if I know I'm going to be replacing a string, I'll take that. I have a voicing kit as well. I have my upright parts in one place and my grand parts in another. I'm not as well organized as I'd like to be, but once every month or so, I go through my kit and take out all the tools and parts that tend to accumulate and make my case heavier."

Giller has worked in Manhattan his entire 21-year career since studying with Bill Garlick. One thing that makes his job easier is a unique approach to his clientele. While some technicians try to work only on grands, or on a particular manufacturer's pianos, Giller has another criteria.

"I try to limit my work to loved pianos. I tend to avoid institutional work, neglected pianos or pianos that are just pieces of furniture, even if they're good ones. I don't care if it's a spinet or whatever, as long as my client cares about their instrument and wants the best for it. I enjoy diversity — it's not easy, but nothing in life is.

"New York is such an odd place. I don't know that this would work anywhere else. It really is a music center, with a lot of pianos, a lot of people. One can easily find a niche here. You could probably have a business just doing work for any particular ethnic group. Some non-English-speaking immigrants begin that way. I probably have within 10 square blocks as many people and pianos as some PTG members have within 100 square miles. I could probably just stay in my own neighborhood. The better instruments tend to be on the east side, where I live, while the professional musicians are mostly on the west side."

Giller said that he had owned a car at one point, but gave it up because it was such a burden. He was always worrying about it, whether it was being broken into or banged up. And parking is very expensive.

"If I need to transport an action, I'll hire a car service. A driver with a station wagon costs about the same as two garage fees," Giller said.

What about the Big Apple's fabled crime problems? "I've never been a crime victim and I've lived in New York all my life," Giller said. "A lot of mugging victims come here from out of town. When you grow up here, you develop basic survival skills. It's mostly a matter of common sense and staying alert. I was on a bus the other day, and these two tourists got on. They needed exact change, and one said to the other, 'All I have are all these twenties.' The whole bus laughed. I thought, 'Why don't you just pass out the money and make it easier for everyone!'"

Roeder finds one additional benefit to riding a bicycle. "When I used to work 'out in the world,' I worked five days a week, maybe six if things were busy, and I worked more normal hours. Now, I work 10 or 12 hours a day, seven days a week. The time I used to have to go to the gym has disappeared. The exercise I get on the bike is essential. It allows me to keep up this pace."

# AUXILIARY EXCHANGE

**Dedicated To Auxiliary News and Interests**

## HEAR YE! HEAR YE!

The 1994 Piano Technicians Guild Convention is about to begin. Places everyone. I do hope that all of you in the Auxiliary have all of your reservations and travel plans made by now. It's not too late to walk, run, drive or fly to Kansas City, Missouri, and sign up for the fun-packed experience of a lifetime. That is, if you receive this JOURNAL before the convention begins.

I have good news for all the members of the Auxiliary, so listen up. Be sure to look at your convention packet as soon as you get to your room. There will be many pieces of paper for you to read. But be sure to look for a small form to fill out with your name, address and phone number, and place it in a box that will be by the Auxiliary table. This is for a drawing sponsored by many of our exhibitors who will pay the Auxiliary registration fee for the 1995 Albuquerque Convention. We will have several drawings, and the chances of your winning are very good. This will be given only to those who register for the KC convention. So, look for it in your packet.

The other item that I am excited about is the professional counselor who is going to talk to us on Saturday about spouses who are in business together and how this affects a marriage. It should be very interesting, so tell your spouses about this session from 10:30 to noon on Saturday.

And another innovation this year will be for spouses. You may attend two classes on Sunday morning. Again, as soon as you receive your packet after registration, look through the class titles and decide which ones will benefit you and your business the most. Make sure that your spouse attends a different one so that you can compare notes with each other after class and exchange ideas. Remember, if you have a noon check out time in the hotel, you can check out before going to class and store your luggage in the hotel lobby. That way you won't miss these two exciting classes.

Now, last but certainly not least, tell everyone you know about the fabulous tour scheduled for Friday from 9:00 a.m. to 4:00 p.m. You will still be able to sign up for the tour as soon as you arrive in KC; however, we must have a final count by Thursday morning. It sounds like a wonderful day. Many tuner spouses are attending also, so we really must have picked a winner.

See all of you there in Kansas City.

*Phyllis Krahmer Tremper*
*PTGA President*

The following poem was given to Phyllis Tremper by a fraternity sister in one of her other music groups. Perhaps it is also apropos for the PTGA!

**DO YOU JUST BELONG?**

Are you an active member,
The kind that would be missed?
Or are you just content
That your name is on the list?
Do you attend the meetings
And mingle with the crowd?
Or do you just stay at home
And complain both long and loud?
Do you take an active part
To help the work along?
Or are you satisfied to be
The kind to "Just Belong?"
Do you ever go to visit
A member who is sick?
Or leave the work for just a few.
And talk about the clique?
There is quite a program scheduled
That means success, if done.
And it can be accomplished
With the help of everyone.
So attend the meetings regularly
And help with hand and heart.
Don't just be a member
But take an active part.
Think this over, sister
Are we right or wrong?
Are you an active member?
Or...do you "JUST BELONG?"

*Rana Roper, Northeast Louisiana University*

I received a copy of "STAY TUNED" the newsletter of the South Eastern Pennsylvania Chapter of PTG from Marilyn Raudenbush.

One article from the Newsletter seems particularly appropriate to run in this issue. As noted in our President's Column this month, one feature of this year's convention in Kansas City will be a talk given by a professional counselor on the pros and cons of being in business with your spouse. The following was originally printed in the STAY TUNED newsletter by Fred Raudenbush. Many thanks to Marilyn for forwarding this to me so that we can all enjoy and learn from it!

This month I would like to write to you about having a spouse in the piano business with you. For me, it has worked out great and we enjoy each other's company. However, there is an old expression that you don't miss something until it is not there.

During my wife Marilyn's time in the hospital, I had to survive on my own. I have discovered that I am quite good at operating the microwave. And, you can survive at McDonald's drive thru.

Suddenly I was faced with more duties than I realized. The first was the telephone. I do have an answering service, and that is a help, but each person must be called back. Here is a list of yesterday's calls:

6 calls seeking health insurance
3 selling advertising
4 asking for contributions
1 wants to be a piano tuner
2 for organ repairs (we don't do organs)
2 want me to give (free) classes at school
1 selling windows and siding
1 wants to sell old uprights
2 seeking advice on piano value
2 want to get old uprights
1 forgot to leave phone number
4 to book appointments

The next time Marilyn tells me that she was on the phone all day I will understand why!

I thought I would help with some of the work on the computer. After all, I am good at playing "Wheel of Fortune!" First I got into the program that I wanted—that was easy. Then the computer asked for a password. I typed in what I thought she told me. The computer then said "Invalid Password" and went blank. So, I pushed HELP and learned how to build my own computer.

In the shop Marilyn is also good for elbows and stripping. What I meant was...Oh, never mind, it takes too long to explain! She handles many of the jobs in the shop when finished with the office work. Everyone knows how much I hate to clean. My idea is just to paint the floor every 6 months, but it does make the floor lumpy. She tells me that my way of dusting is not supposed to be taking the air compressor and blowing all of the dust off.

Sometimes my wife will accompany me to a school or church while I work on a piano. It makes those boring times a little bit more interesting. We stop at a nice restaurant when finished and have a good meal. I know what you are thinking—they must go to a lot of schools and churches!

As many of you know we often travel together, combining business and pleasure. We enjoy traveling and enjoy long distance piano moving. Marilyn accompanies me to many of the PTG meetings, just because I don't like traveling alone—it can be boring. Recently, because of her surgery, Iniv Homer, Rush Limbaugh (talk radio) and I have been spending more time together.

I hope that you too will consider the benefits of having your spouse work with you. Since you are a PTG member your spouse does not need to be a PTGA member to make it complete.

*Fred Raudenbush*

## Fill This Column...!

Send us your articles, your thoughts, your comments, your opinions, etc...etc..etc.

Write down your experiences at this year's convention and technical institute and share some ideas with those who did not have a chance to attend!

Articles can be any length.

Send your articles to:

Jennifer Reiter
10516 Ohop Valley
Extension Road
Eatonville, WA 98328

Don't let another issue go by. Your input is important to the overall success of the Auxiliary.

## Membership in the Auxiliary has its benefits...

If you are not a member but would like to be...contact Auxiliary Treasurer Sue Speir.

*It's a great way to meet new friends...*

# CLASSIFIEDS

Classified Advertising rates are 35 cents per word with a $7.50 minimum. Full payment must accompany each insertion request.

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COMPONENT DOWNBEARING GAUGES (bubble type) give readings in degrees (string angle) and thousandths of an inch (dimension). Available at supply houses. Box 3247; Ashland, OR 97520

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WANTED: Complete tracking mechanism, fish pole, clutch, etc., for Simplex Spool Box. Bud Glover, 184 Esquimalt Rd. #321, Victoria, BC V9A-3N9.

### DISPLAY AD INDEX

# PianoDiscussions™

July 1994

News From The World Of PianoDisc


# PianoDisc will sizzle at Summer NAMM Nashville

July is bookended with road trips for the PianoDisc crew. At the beginning of the month there is the PTG convention in Kansas City (no Elvis sightings reported yet), and closing out July is the National Association of Music Merchants (NAMM) trade show in Nashville.

This is the second year that NAMM has been in Nashville, and the second year that PianoDisc will be there too. This show is a lot smaller than the huge Winter NAMM show held each January in Anaheim, with half as many days, a quarter of the space and less wear and tear on the feet. Many East Coast, Midwest and Southern dealers came to the summer NAMM in Nashville last year.

PianoDisc will showcase new pianos (see the article below), new software, new products and (keep this under your hat, we're still working on this one) a VERY famous celebrity musician who will be appearing in our booth and visiting with YOU, if you stop by. So if you're wavering on Summer NAMM, for goodness sake stop all that shaking and get to Nashville. It may be your last chance to visit the former Capitol of Country before they change the name to Branson II...

## PianoDisc Installation Training 1994

- August 10-13
- September 21-24
- October 12-15
- November 9-12
- December 7-10

## Continuing Education Series 1994

- August 8-9
- October 10-11

*Tuition for the Installation and the Continuing Education seminars is **free**, but a $50.00 refundable deposit is required for confirmation. The PianoDisc Continuing Education Series seminars are restricted to PianoDisc certified technicians in good standing. For more information about attending a PianoDisc Installation Training seminar or a Continuing Education seminar, call PianoDisc at (916) 567-9999 during regular office hours.*

### Our Address

PianoDisc
4111 North Freeway Blvd.
Sacramento, CA 95834

### Telephone Numbers

Phone: (916) 567-9999
Fax: (916) 567-1941

**Tech Support: (619) 258-1460**
**(916) 567-9999**

*Our telephone lines are open daily (except week ends and holidays) from 8 AM–5 PM Pacific Time.*

# New PianoDisc furniture models available this fall

PianoDisc will soon unveil several new models of designer and decorator pianos. These fine instruments are available in different designs, colors and finishes to complement a wide variety of interior design ideas. The idea is to meet customers decorating needs as well as their musical ones. "Many people who buy PianoDisc pianos are at least as concerned with how the instrument will fit into their interior design scheme as they are with the quality of the instrument and playback system," says Tom Lagomarsino, Vice President/Marketing. "These fine instruments are as artistically designed as they are technologically superb."

The new decorator models include two 43" vertical pianos in cherry and oak finishes, the **Queen Anne PianoDisc** (a 4'11" baby grand with a satiny sheen and attractive decorator flourishes), and the **Empire Inlay PianoDisc**, a spectacular 5'9" grand with intricate wood designs on the front and sides done in warm wood tones with a high gloss finish. Some of these instruments will be shown at Summer NAMM, so stop on by!

# Butch Thompson to record early jazz for PianoDisc

Remember "A Prairie Home Companion"? It was that delightful homespun weekend radio show that aired live every weekend from the World Theater in St. Paul, Minnesota. Audiences were delighted week after week with Garrison Keillor's "News from Lake Wobegon" narratives, and thrilled to the early jazz stylings of the Butch Thompson Trio.

Well, "A Prairie Home Companion" is gone now (except for reruns and occasional reunion shows), but Butch Thompson is still going strong. With performance commitments across the country and around the world, Mr. Thompson's music has been heard by millions around the globe. "PianoDisc is grateful for the opportunity to capture his performance", says Steve Merritt, Talent Booking. "Butch is world famous for his Jelly Roll Morton interpretations and for his dazzling stride technique. These recordings will be unique and historic".

Mr. Thompson's performances are tentatively scheduled for release in October.

# Tech Spotlight

This month we blind ourselves by shining our tech spotlight right on Sacramento, specifically on PianoDisc's Installation Technician **Don Dusenbury**. Many will remember Don as their good natured, down-to-earth instructor at a PianoDisc Installation Seminar or Continuing Education Seminar. Don is as nice a guy as he is knowledgeable about player pianos, and we like him so much we asked him to spend a little more time with us here at our Sacramento factory. Don agreed, and so he has been given the task of making sure all of our factory installed PianoDisc systems meet his (and our) highest standards. In short (heh, heh) he's **ours** now.

Of course he'll still be conducting the PianoDisc seminars in his usual intensely laid back style. And he'll still be available for tech support calls here at the PianoDisc factory by calling our switchboard at (916) 567-9999.

# Tech Gazette

Yamaha Service

## George Gershwin Plays Disklavier™

An unprecedented recording of piano roll performances by legendary American composer George Gershwin was featured among new PianoSoft selections introduced at the 1994 Winter NAMM Show.

The new Gershwin disk, "*Gershwin Plays Gershwin*", features such classics as "Rhapsody in Blue" as well as selections that have never been published before. It resulted from the Gershwin Piano Roll Recording Project, spearheaded by Gershwin scholar, Artis Wodehouse. Using original piano rolls created by Gershwin from 1916 through 1926, the project produced the first compact-disc recording of Gershwin performing his own work.

According to Wodehouse, the project would not have been possible without the Disklavier piano's ability to interface with both modern computers and player piano technologies of the past. Computer programs were specifically designed to capture not only the note field on the original Gershwin rolls, but also the dynamics, articulations, and pedaling encoded on the originals. This information was then transferred to 3.5" floppy disks playable on the Disklavier piano, which were used to play the Gershwin performances during the final recording sessions. The compact disc is being released on the Elektra/Nonesuch label.

Using the floppy disks created for the project, Yamaha then produced the new Gershwin addition to the PianoSoft library. "*Gershwin Plays Gershwin*" is a truly historic recording that will allow Disklavier piano owners to listen as Gershwin himself demonstrates why he is a giant of American music.

The Gershwin disk exemplifies the Yamaha commitment to providing PianoSoft recordings that are truly one-of-a-kind, and the result from recording projects that stretch the creative potential of the Disklavier piano to new heights.

## Newport Music Festival available on disks for Disklavier™

In early 1994, Yamaha will release new PianoSoft selections resulting from another innovative recording project. In 1992 and 1993, Disklavier pianos recorded the live, on-stage performances of world class artists appearing at Rhode Island's renowned Newport Music Festival, one of the most prestigious festivals in the United States.

The new releases will include two PianoSoft disks from the 1992 Festival (in addition to three titles already released from that year) and three from 1993, the Festival's Silver Anniversary. The recordings feature such artists as Boris Beresovsky, Phillip Bush, Nelson Padgett, Eduardus Halim, Thomas Hrynkiw, Pietro De Maria, and Ann Marie McDermott.

Disklavier Piano owners will now be able to hear the historical Newport Music Festival performances on the Disklavier piano, right in their living room. These unique Disklavier piano recordings, in addition to more than 230 other PianoSoft disks, now available in almost every musical style, demonstrate the Yamaha commitment to provide disks to meet a spectrum of individual tastes.

## Next Month: Major Changes at Yamaha...





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