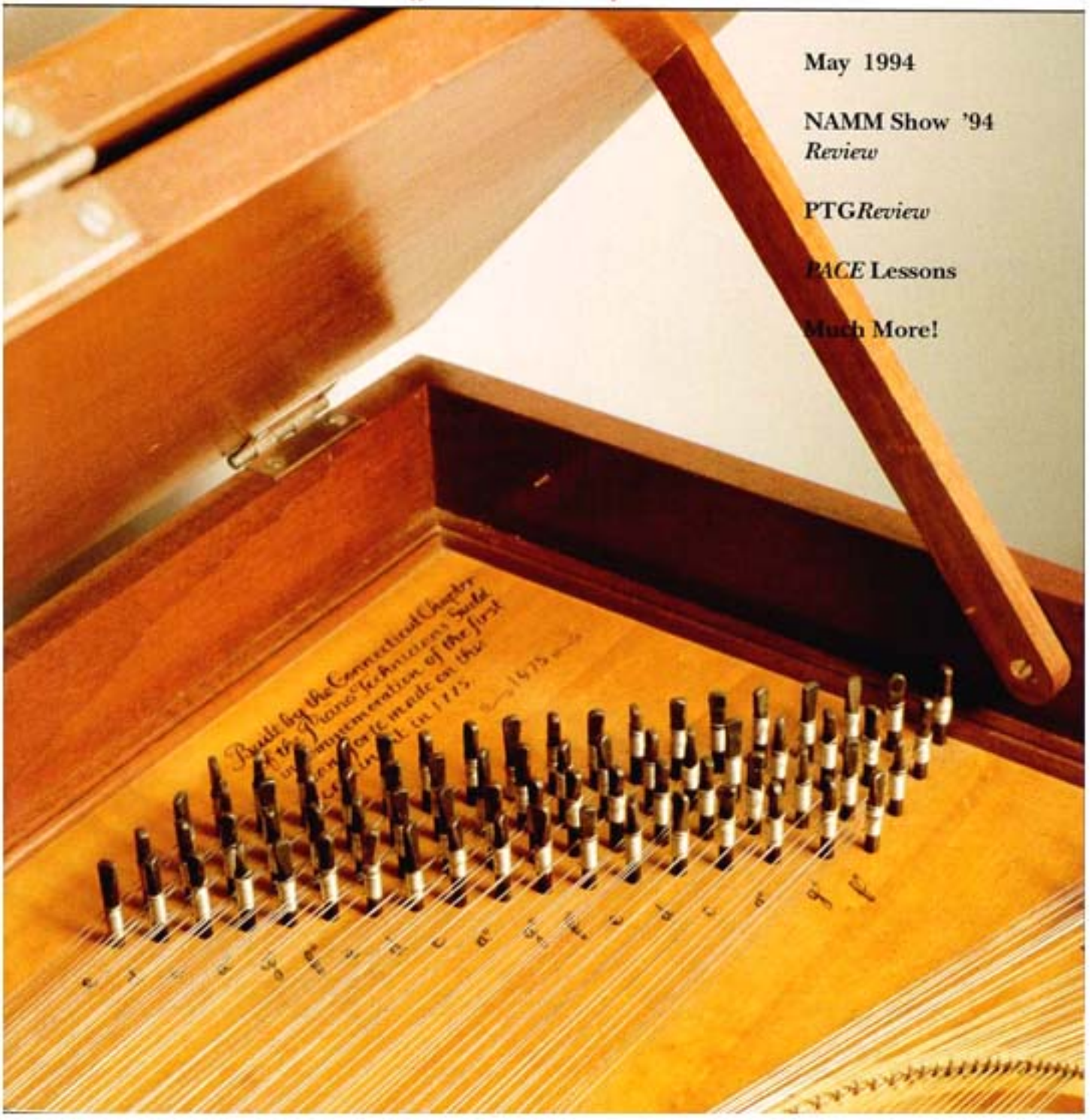
PIANO TECHNICIANS
Journal
Official Publication of Piano Technicians Guild



May 1994

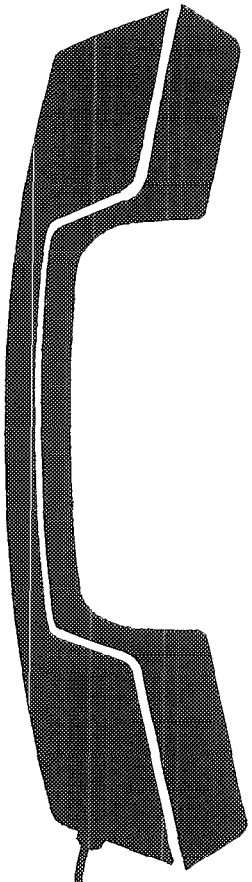
NAMM Show '94
Review

PTG*Review*

PACE Lessons

Much More!

Technical help from Baldwin is just a phone call away . . .



Like this free 36-page parts catalog with supplementary price list, for example. It provides a complete listing of most Baldwin piano parts as well as other useful technical information. Many of you use Baldwin hammers, pinblock material and action parts to optimize your routine repairs and restorations, so this catalog is an essential reference tool for you.

Now Available!
Unfinished Grand Case Parts

- Grand Lids • Lid Props
- Music Shelves • Lyre Assemblies
- Music Desks • Custom Parts

Parts are compatible with most grands.

I'm Linda Timbs, and I'm the person you usually talk to when you call Baldwin Tech Service for parts. For eight years I've been coordinating parts orders and shipments for Baldwin grand and vertical pianos. During that time I've become very knowledgeable about Baldwin Parts and your technical needs. I enjoy using my expertise to help you make the right choice of Baldwin materials for your application.

Call me today for your free parts catalog or to order piano parts.

Call 501-483-6116

TOLL FREE 1-800-876-2976

7:00 a.m. - 3:30 p.m. CST

Baldwin

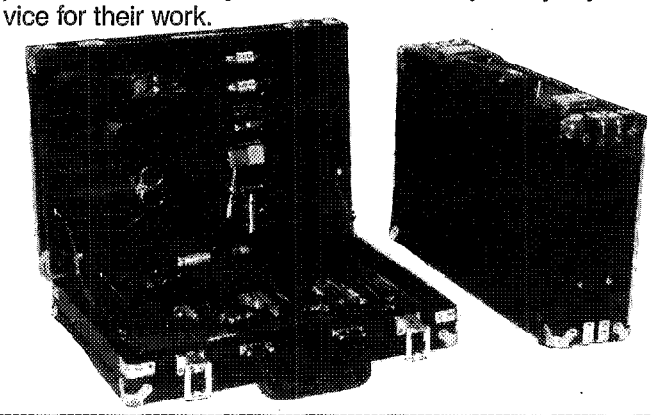
Piano Technical Services Department,
Highway 63 South, Trumann, AR 72472-9604

CASES by GENCK

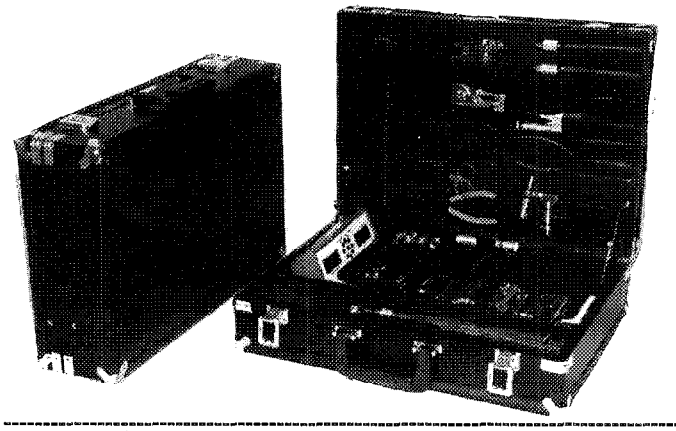
Exclusively Distributed by SCHAFF

For the professional technician who demands the finest!

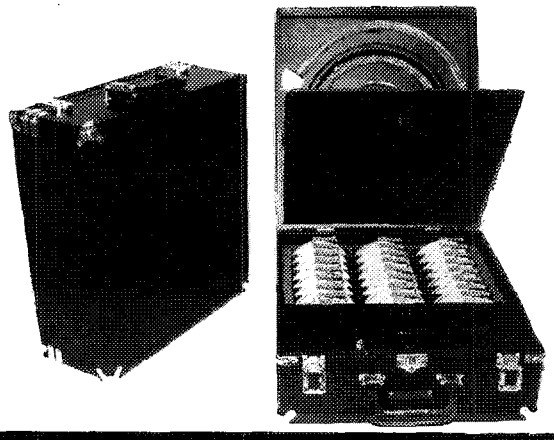
• ORGANIZED • COMPACT • DURABLE — Genck cases are expertly designed specifically for the piano technician, and feature a thick wood shell, black high grade vinyl covering, durable molded inserts, reinforced binding, heavy duty brass colored hardware, and a strong handle. These cases look professional, are built to last, and perform in a class by themselves. See why a majority of technicians choose Genck cases and Schaff's superb service for their work.



No. 275 — PROFESSIONAL TOOL CASE is very popular and has been a standard in industry for years. It is compact and light, yet holds enough tools for most work in the field. A removable tool pallet covers bottom storage sections for additional tools or supplies. Small plastic parts containers are also available. Case is 15½" L x 10½" W x 3¾" D and weighs 4 lbs. empty.



No. 2663 — ACCU-TUNER CASE is the latest item from Bruce Genck designed to carry the Accu-Tuner as well as most technician tools. It is a larger case, measuring 18" L x 12½" W x 5" D. The storage compartments, removable tool pallet and the top lid case pockets are bigger than the No. 275 case above.



No. 276 — UNIVERSAL STRING AND WIRE CASE is back by popular demand. All of your stringing tools and material can be kept together in one case. The self contained removable lid holds universal strings, while the bottom section has 24 slots for ⅓ lb. coils of piano wire and a large compartment for tools. Case measures 16½" L x 15" W x 6½" D and weighs 6 lbs. empty.

• Call or write for pricing information.

THE HOUSE DEDICATED TO SERVICE

Schaff PIANO SUPPLY COMPANY

451 OAKWOOD ROAD

LAKE ZURICH, IL 60047-1516

24 Hour Hot-Line

Reg. (708) 438-4556

T-Free (800) 747-4266

Fax (708) 438-4615

PIANO TECHNICIANS
Journal
Official Publication of Piano Technicians Guild

Larry Goldsmith
Publisher/Executive Director

Jami Henry
Managing Editor

Nick Gravagne
Michael Kimbell
Contributing Editors

Sandy Essary
Subscriptions

Mary Kinman
Director of Member Services

Catherine Wilane
Director of Finance

Home Office
Phone: 816-753-7747
FAX: 816-531-0070

Editorial
Piano Technicians Journal welcomes unsolicited materials, photographs and ideas from our readers. Please submit by mail or FAX. MicrosoftWord 5.1-Macintosh format preferred. We'll acknowledge all submissions and return those we can't publish. DEADLINE: No less than 45 days before publication date (i.e., September 15 for November issue). Send materials and letters to: Piano Technicians *Journal*, Managing Editor, 3930 Washington, Kansas City, MO 64111-2963.

Subscriptions
Annual subscription rates: $85 (US)/1 year; $155 (US)/2 years; Single copies: Current year/$10; 1 year/$5; back copies/$2 if available. Piano Technicians Guild members receive the *Journal* for $45 per year as part of their membership dues.

Address Changes/Subscription Problems
Send or FAX a description of the problem and your current address to: Subscriptions, 3930 Washington, Kansas City, MO 64111-2963 or call between 8:30-5 p.m. CST—Monday-Friday.

 The Piano Technicians Journal (ISSN 0031 9562) is the official publication of The Piano Technicians Guild, Inc., 3930 Washington, Kansas City, MO 64111-2963. The *Journal* is published monthly. Second class postage paid at Kansas City, MO and at additional mailing offices. US ISSN 0031 9562 foreign and domestic.

POSTMASTER: please send address changes to: *Piano Technicians Journal*, 3930 Washington, Kansas City, MO 64111-2963.

Journal Changes Old & New...

In the first month of 1913, a new magazine hit the streets — or rather, it hit the mailboxes of a few hundred piano tuners scattered across the United States. Appropriately, it was called "The Tuner's Magazine." It was published in Kansas City, by one Sumner Bales. Although not affiliated with any tuners' organization, it soon became the official publication of a fledgling group called The American Guild of Piano Tuners.

As the ensuing 80 years passed, organizations changed their names, split, merged, grew and subsided. Magazines for the trade were published in Milwaukee, New York, Houston, Seattle and other cities. Now it's 1994, and we're back in Kansas City. You don't hear the word "Tuner" so much now, because we're the Piano Technicians Guild, and our members — those who have challenged the examinations — are Registered Piano Technicians.

This magazine, the *Piano Technicians Journal*, has gone through its share of changes. As longtime readers will attest, we've been incredibly lucky over the years. A long string of excellent technicians/communicators/educators have left their mark on the publication. In many ways, this dynasty has provided the primary means of education for literally generations of piano technicians. The names of those who have filled this chair — wherever it was located — were always among the best and the brightest.

Now, for the first time in all those years, there is no technician/editor listed on the masthead of the *Journal*. As Jim Harvey said in last month's issue, he will no longer be serving as *Journal* editor.

Jim shared one invaluable, yet intangible, trait with virtually all of his predecessors. If you've ever had a chance to chat about the state of the world with Jim — and I highly recommend it if the opportunity arises — you remember it as a treat. My dictionary describes the word "eclectic" as "...made up of what seems best of varied sources." Jim's picture is beside that definition. And he combines that wide range of interests and experience with excellent communications skills and a sense of humor that's often, shall we say, off the wall. And like each of his predecessors, Jim was able to get it all down in black and white. Reading Jim's stuff was like having a conversation with him.

That's the fun side. It takes a lot of work to make it seem that easy. Each of the editors I've known threw themselves completely into the job. I've heard about late nights at the word processor and scores of telephone calls, many bordering on the absurd. They've battled burnout, computer crashes, jet lag and that terrible moment when you peer up from a blank sheet of paper and see an onrushing deadline. In some ways, their lives were taken over by PTG's insatiable need for knowledge. Needless to say, it's always been a tough job that's always been done with grace and style, often at a higher personal cost than anyone ever knew.

***

The magazine you're holding is a product of many contributors, and it will remain so for at least the near future. You may not even have recognized it right away, because of the changes we've made. From the bigger flag on the cover — hey, we're proud of our *Journal!* — to the way the

departments are organized, to the internal layout, we're trying to make it more attractive and readable. Kudos to Jami Henry for designing it, organizing it and putting it together. And thanks to everyone who helped out.

As you read, you'll recognize many of the bylines. The serial articles you were following will continue without skipping a beat. You may find some new features that we hope you'll like, but at its heart, it's the same old *Journal*.

I spoke earlier about the stamp that various personalities have put on this publication. In an organization of fewer than 4,000 members, it's an important issue. But the personality that we're primarily concerned with — have always been concerned with — is yours. We want the *Journal* to reflect the cumulative personality of PTG, to be what *you* want it to be. So we need you to write articles, ask questions, send in tips, even gripe if you have to! I can't guarantee that everything will be printed — no magazine can do that — but I can guarantee that we'll do our best to continue sending you the magazine you want to read each month.

Larry Goldsmith
Executive Director/Publisher

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 5 • May 1994

6 President's Report
New Educational Ventures
Projects and progress for our future
By Fern L. Henry, RPT

8 Executive Director's Report
Preserving Piano Technician History
PTG Foundation aims to hold on to past
Larry Goldsmith

DEPARTMENTS

10 Q & A
Journal Readers ask experts in the piano service industry about pressure bars, wippen springs and climate control.

14 Tools, Tips & Techniques
Tantilizing tricks of trade from piano technicians include topics such as cleaning pianos, lighting tips, damper setting weights, using bass string scraps and much more.

52 Foundation Spotlight
Take a look at the "Giraffe Piano" made by Henry S. Kroeger Sr., Henry S. Kroeger and Sons, Germany.

54 Institute Update
Institute Director Steve Brady highlights more classes being offered at this year's Technical Institute in Kansas City; Larry Goldsmith outlines "Getting Around Kansas City," and the 1994 Technical Class Schedule Grid is here for you to design your personal curriculum.

61 Marketing Ourselves
Eight foolproof ways to Achieve Public Recognition of PTG and RPT from the Marketing Committee.

COVER ART

PTG's Connecticut Chapter built this 1775 look-alike for the U.S. Bicentennial celebration. To read more about the Connecticut Chapter project, articles appeared in the Piano Technicians Journal of August 1975 and October of 1976. See the related article on page 46 of this edition, and find out how you can see this pianoforte replica during the 37th Annual Convention and Technical Institute.

Cover photo by Jami Henry

PACE
Professionals Advance through Continuing Education
LESSON PLAN

18 *PACE* Lesson Plan **By Bill Spurlock, RPT**
Technical Lesson #9—Vertical Regulation Part 2: Alignment.
Follow the step-by-step procedures outlined here and in Part 1, printed in the April 1994 issue of the *Journal.*

23 PACE Lesson Plan **By Michael Travis, RPT**
Tuning Lesson #9—Tuning 6:3 Octaves.
Fine tune your aural skills by following this lesson plan. Practice checking and tuning 6:3 octaves.

PTG*Review*

47 PTG*Review*
Articles dedicated to the news, interests and organizational activities of Piano Technicians Guild. This section highlights information which is especially important to PTG members, calendar events, membership updates and much, much more!

IN ADDITION

63 PTG Auxiliary

64 Classified Advertising

68 Display Ad Index

FEATURES

25 NAMM Show Review—Part 1
By Yat-Lam Hong, RPT
Yat Lam explores the depths of this year's show of shows and takes a look at what's hot and what's maybe not.

30 Building Tone In The Soft Hammer
By Nick Gravagne, RPT
The ins and outs of hammer lacquering, hanging and reinforcing plus a look at hardening solutions and needle placement.

34 The Magic Circle of Fifths
By Michael Kimbell, RPT
This graphic depiction of the interactions between fifths, thirds, and sixths in the temperament will give you great insight into the magic of intervals.

39 Loving Imperfect, Inharmonic Pianos
By Kent Swafford, RPT
For the love of pianos...old ones...new ones...any of them.

41 Voicing Without Needles
By Bob Davis, RPT
Bob explores a twist on the hammer theme and discovers great possibilities for evenness, stability and ease of tuning.

44 The Tuner
By Paul Monroe, RPT
The continuation of this series of articles, reprinted from past Journals.

45 Technostuff
By Richard Anderson, RPT
Tips on how to keep a newly regulated grand in good condition from tuning to tuning.

46 Bicentennial Piano Display
By Leon Speir, RPT
Vice President Speir addresses the bicentennial project pictured on this month's cover.

New Educational Ventures

Projects and progress for our future

Last month in this column, we looked at a Resolution on Educational Goals that Council will be considering this July. In Milwaukee last year, the Council voted to designate half the funds raised from the 1994 dues assessment toward educational projects that would benefit all members; based on the dues payments thus far, it appears that approximately 22,000 will be available in the 1994 budget for investment in enhancing the educational benefits we offer.

The Board in January of 1994 received the report of the Special Panel on educational Goals. This Panel, chaired by Michael Drost, CWRVP, and comprising LaRoy Edwards, Doug Neal, and Al Sanderson, provided an extensive report including many specific suggestions about new and existing programs. After study of the Panel's report and using the input from the 1993 survey, the Board chose to pursue several specific projects this spring; all these projects are expected to be completed before July.

First, one of the Panel's most intriguing suggestions was to explore the possibility of entering into cooperative efforts with piano technology schools and piano manufacturers. We had communication from several manufacturers' technical representatives and two schools showing interest in cooperating with us in educational programs. The Panel felt strongly that PTG should write a curriculum and then make a business proposal to our industry partners to invite their participation. The Board selected Vertical Piano Regulation and maintenance as the topic for the first curriculum we will produce. PTG has written a prospectus outlining this project, and we are now looking for a writer/educator, who will write the curriculum and design the course support materials. The Board will then make the business proposals to possible partners and report to Council on implementation plans. If this initial curriculum project is well received, PTG can develop others on a variety of technical topics.

The 1993 survey showed strong interest in books on piano technology topics. Noting the success of the two Exam Sourcebooks which are essentially Journal reprint books—the Board authorized the development and production of more collections of Journal articles on popular topics. Accordingly, PTG has agreed to work with Yvonne Ashmore, RPT, to produce reprint books on action rebuilding and restoration and major rebuilding. Valuable Journal articles on these topics will be assembled into permanent resource books. Again, if these reprint books meet with the members' approval, other technical topics can be selected and researched.

To support the *PACE* Academy and other hands-on classes that PTG might offer, the Board voted to purchase 15 grand action models. These will be used in the 1994 Technical Institute and in the Convention Test Center. Plans for their future use are under discussion; possibilities include selling them to chapters for testing purposes or renting them to chapters and seminars for class use.

And PTG is proud to announce that we will be publishing a book by Rick Baldassin entitled "On Pitch," based on his ground-breaking Journal series of ten years ago which bore that title. Rick's writings in this area made a very important contribution to the profession; he built a bridge between two schools of thought, namely aural tuners and tuners who use electronic devices. Through his analysis of the two tuning methods side by side, he established a more uniform language for tuners to use. Armed with this standardized tuning vocabulary, all tuners can now better understand their craft and learn more readily from one another. This new book will be presented to the members in Kansas City in July. The Board has become aware that others of our respected members have books in the development stages; we hope that "On Pitch" by Rick Baldassin will be the first of many titles we will offer.

The Council will hear the detailed report on the above projects and will then recommend future projects. However, as I discussed in last month's column, we must take time to set clear goals, then choose the right strategies to achieve them. It is Council's duty to set the policy direction for PTG. We will work together at defining our educational goals this year and choose strategies. So far, most members are asking for ever-improving educational offerings, and more Associates upgrading to RPT. The Board has responded by offering the *PACE* program last year, and this year, the Resolution on Educational Goals and the projects outlined above. We all look forward to presenting the Council with a report on progress made and hearing from Council what goals and policies the membership wants to pursue in the years to come.

One final note: as you will have noted by now, this issue of your Journal looks different. We have introduced a new arrangement of the technical material and have chosen a new typeface, paper, and graphic style. We hope you will find the magazine more valuable than ever. As always, we invite your comments and contributions. As announced last month, the Journal is currently in transition, since Jim Harvey has resigned after two and a half years as Editor. While the search for a new Editor ensues, we took the opportunity to incorporate some changes contemplated for many years. We hope that you approve and that you will contribute your questions, suggestions and technical expertise to the growth of this fine Journal!

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.

KAWAI *The Sound Heard Around the World...*

NOTE: Finalists choose Kawai in all fifteen (15) of the worlds most prestigious Piano competitions... In six (6) of the top competitions the first prize/gold was won by pianists who chose Kawai.

Preserving Piano Technician History

PTG Foundation aims to hold on to the past

In the Publisher's Message in the front of this issue, I alluded to the Journal's rich history. It's fascinating to leaf through those old issues. Pick one, say March of 1926, and take a tour with me.

There's an article on sounding board repairs by an NAPT member from Springfield, MO. A Peoria member advocated a then-unheard-of $10 tuning fee. That year's convention was to be in Chicago. A Madison, WI, contributor said that pitch is best raised by two rough tunings and a fine tuning in 24 hours. In Dallas, they were celebrating "Tune-Up Week," with a campaign that included extensive publicity, a $25 contribution from the music merchants' association of Dallas, an essay contest for school children, a 40-foot billboard, and endorsements from music teachers' groups. Then there are items like this one, quoted from the New York Times:

Firemen of Engine Company 65 were astonished yesterday to see a gas flame two feet high extinguished by sound and tonal vibrations produced as simply as on a violin.

A demonstration was conducted at the engine house by Charles Kellogg, a California naturalist, who believes he can solve the problem of fires in large cities. Passing a bow, like an enlarged violin bow, swiftly across an aluminum tuning fork, he produced a screech like intense radio static.

Instantly the yellow gas flame, leaping inside a hollow glass tube, subsided to a height of six inches and became a sputtering blue flare. Another attempt with the bow, and another screech of vibration extinguished it.

Mr. Kellogg told the incredulous firemen that they could put out blazes of the future without moving from fire headquarters. Each house and building, he said, would have its "pitch" scientifically determined and the requisite screech produced with a much larger bow by a process of "tuning in." The General Electric Company, he said, was experimenting with the principle.

Executive Director
Larry Goldsmith

***

Interesting stuff, perhaps, but who really cares? That's my question. There can't be too many copies of the March 1926 issue of The Tuner's Journal around. Is it important to keep something like that, to preserve it so future generations can laugh at the inside jokes, marvel at how far we've come, maybe even learn something? After all, this craft wasn't invented yesterday. There were literally generations of people who taught and shared and gave us the knowledge that you take to work each day. Is it important to keep these odds and ends of history? You tell me — it's your history.

The PTG Foundation thinks it's important. That's why we're trying to collect as much as possible of the history of PTG and the profession of piano technology. We want to preserve it and, as much as possible, share it with everyone. We know it would take a huge warehouse and a staff of hundreds to collect everything and sort through it, and those resources simply aren't available. But what's the alternative?

If you care about the history of PTG, we're looking for help. You may have an artifact, an important document you would like to donate. Or you might wish to make a financial contribution. If so, please contact the Home Office or PTG Foundation President Bruce Dornfeld, RPT.

Meanwhile, in the issues to come, we'll bring you more from the morgue. I'll close with a technical tip from 1926:

In one of the late issues, there was a sketch of a tool to be used for inserting felts under the hammer butt, without removing the hammer. I wish to submit a description of a tool that I have used with satisfactory results for some time for the same purpose.

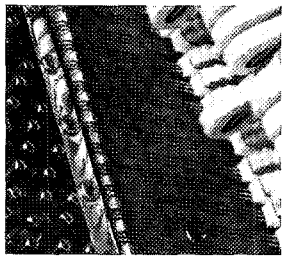
Take the stem from a corncob pipe, insert a piece of wire long enough to protrude about one inch at each end. Place a piece of felt on one end of the wire, apply a little glue, guide this to its place under the hammer butt, press it in position with the pipe stem, withdraw the wire and the job is done.

— Brooklyn, NY

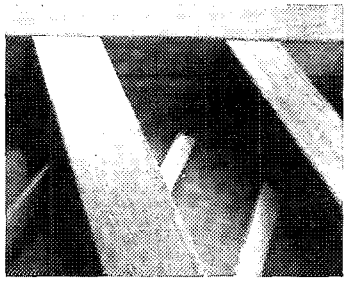
SOUND THINKING

IT'S THE FIRST THING THAT GOES INTO A WURLITZER PIANO.

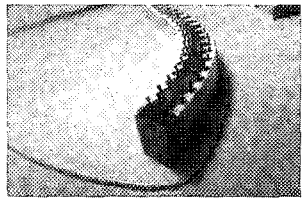
EVERY TIME WE SELECT A MATERIAL OR IMPROVE A MECHANISM FOR ANY ONE OF OUR INSTRUMENTS, WE THINK ABOUT THE SOUND.



THAT'S WHY OUR PIANOS HAVE A GRAND PIANO STYLE PIN BLOCK. SO OUR HIGH-FIDELITY SOUND BOARDS ARE LARGER, DELIVERING ACCURATE, FULL-RANGE TONE. AND OUR BASS STRINGS ARE LONGER, FOR RICHER, FULLER REASONANCE.



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.

BUT DON'T TAKE OUR WORD FOR IT. LISTEN. THE SOUND THINKING THAT GOES INTO EVERY WURLITZER SPEAKS FOR ITSELF.

WURLITZER®
YOU SHOULD HEAR US NOW.
422 Wards Corner Road, Loveland, OH 45140

Q — *Never* tighten or loosen the pressure bar?

I have been told never to tighten or loosen the pressure bar on vertical pianos under tension because of the danger that the screws or bar might snap from being unevenly supported by the screws. Is this always the case? How do I determine what the correct height of the pressure bar should be when the piano is being strung and no pre-existing height dimensions for the pressure bar are available?

Clark Foerster, RPT

A — *From Bernard Mollberg*

This implies that one is presented with a vertical piano with strings and pressure bar already removed by others, or that one *might forget* to note the existing pressure bar height. No doubt many better piano manufacturers experimented and calculated the proper relations of strings and pressure bars. I do not know what these may be, and for many older pianos the information is only to be found by examining pianos with original stringing. Try to observe the general relationship of pressure bar and plate string termination ridge in similar pianos. As Capo D'Astro bars are filed, shaped and polished in grands, so should the ridge on the plate and the bearing surface of the pressure bar be polished to remove string cuts. Consider adding a dry film lubricant like McLube. After new strings are installed, but not fully tensioned, position the pressure bar. Tighten the screws in order, by one or one-half turn initially to bring the pressure bar down uniformly. Tighten screws by half or quarter turns each as you feel you are approaching that "ideal" height. You may have to settle for "not too much, not too little, but just right." This is one of many obscure areas of piano technology where conservatism and following a middle path is best. If you stay away from both extremes of maximum and minimum possible height, I think all will be well. I can't think of any good reason to adjust pressure bar height in a strung piano. If some small adjustment seems necessary, turning screws by small amounts, in order, should be safe.

Bernard Mollberg is a non-tuning Associate PTG member specializing in complete piano rebuilding. His company, Mollberg & Associates Piano Restoration is located in Austin, Texas.

Q — *Wippen springs — 101*

What is the purpose of the wippen spring?

Anonymous Reader

A — *From Don Mannino, RPT*

There are sometimes two springs in grand piano wippens; the ubiquitous repetition spring which we all deal with on a regular basis, and on some actions the auxiliary wippen spring, sometimes called the wippen helper spring. The spring is mounted on the rear of the wippen, usually coiled around a cord and pulling on another cord which is attached to the wippen flange.

The purpose of this spring is to reduce the moving mass of the action. It accomplishes this by pulling up on the wippen, reducing the weight that the wippen and hammer place on the key. This cuts down on the need for leads in the keys, because it acts on the action in the same way as key leads.

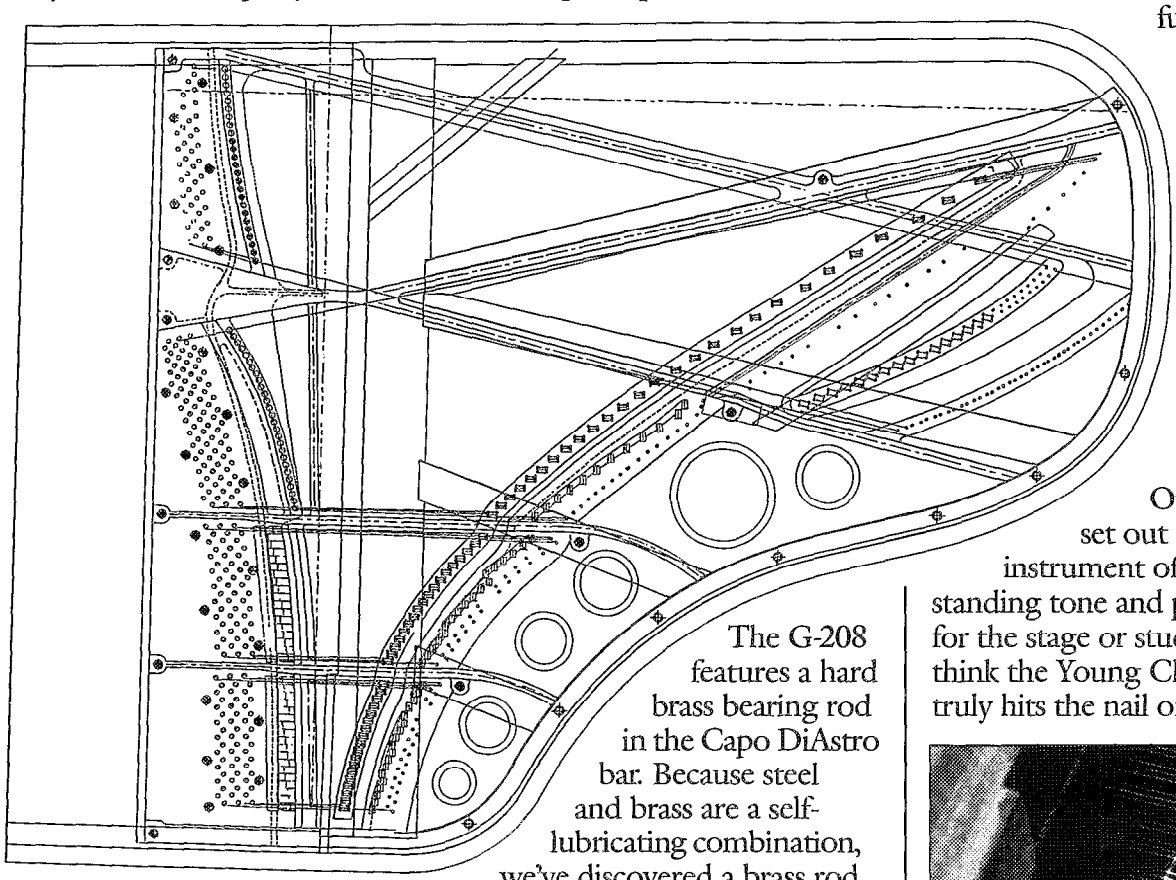
Key leads are normally placed in the front portion of the key, in effect pushing up on the wippen and thereby reducing the "touch weight" at the front of the key. If a grand action has no weights (and no helper springs) the amount of weight it takes to depress the key (the touch weight) might range from 60 to 95 grams, so several (2 to sometimes 6) lead weights are added to lower this to something around 50 to 55 grams. The wippen helper spring is another way to reduce the touch weight as measured at the key, so that fewer lead weights will be required to bring the touch weight down to the normal 50 to 55 grams.

The drawback of having too many leads in the key is that it slows down the return of the key and it makes the pianist use more force when playing the piano loudly. The best way to understand this is to imagine a teeter-totter. If there is no weight on the teeter-totter, it can be raised and lowered very quickly and easily with minimal force. If you place a one pound weight on one side, the teeter-totter should quickly lower on that side (if the friction is not too high—another subject entirely!). Now imagine the teeter-totter balanced with 500 pound weights on each side. If you place your one pound weight on one side it will still lower to the ground, but much more slowly. In effect, the touch weight at one end of the teeter-totter is still the same, but

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.

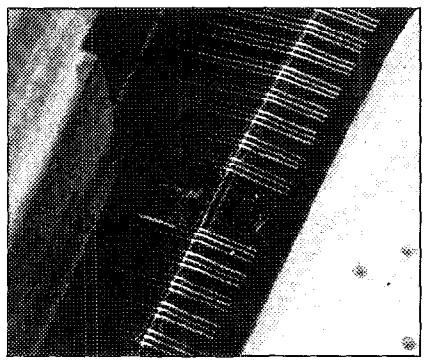


The G-208 features a hard brass bearing rod in the Capo DiAstro bar. Because steel and brass are a self-lubricating combination, we've discovered a brass rod offers better control of strings during tuning. In addition, the brass rod is easily replaced later in the life of the instrument eliminating the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

YOUNG CHANG

The best the world has to offer.®

the high mass makes it hard to get it moving.

There are a couple of reasons that all manufacturers don't use auxiliary wippen springs. One is that it is more expensive. Another is that the maker may prefer to have a little more mass in the action, which some pianists may prefer (some feel that added mass helps the pianist to bring out the bigger tone from the piano, but this is a controversial topic). Finally, the added complexity of the action can be seen as a drawback, because the likeliness of errors in manufacturing and later servicing may outweigh the relatively small benefits in performance.

The wippen springs should not need re-regulating. Most actions have had the keys weighed off after the springs were set, so any change in the spring could adversely affect the touch weight at the key. If the hammers are being changed and you are planning to re-weigh the keyboard, then you can even out the springs in a couple of ways. One is to disengage all of the springs from the silk cords at the flanges, and simply line up all the spring tails by pulling up or pressing down on the spring. Once you get the springs to form a straight line, then re-engaging them should give similar tension.

The more accurate way to adjust these springs is by comparing the tension. I don't have a gram gauge that is stiff enough to measure these springs, but some factories do it with a spring gauge. The ideal way would be to remove all the leads from the keys and adjust the springs according to touch weight, while making sure that there were no friction problems by measuring the upweight also. This is a tedious approach, but would give the most ideally even touch. The key weights would be added after the springs are set, as usual.

In practice, I have usually only had to adjust individual springs when a problem arose. In the few cases (I can remember only 3) when I have weighed off the keyboard on an action with the auxiliary wippen springs, I have used the straight line approach with good results. One concert grand had an amazingly fast action because it turned out to need no leads at all throughout the center section after the hammers were lightened and the springs were set!

Don Mannino is the National Service Manager for Young Chang America in Cerritos, California. He is currently a regular contributor of technical features for the Piano Technicians Journal.

Q

Climate can pitch a whing, dang, doodle

I have noticed that when a piano goes through humidity changes, the three strings of each unison don't change pitch equally. That is, each right string may end up slightly sharper than the center string, and each left string slightly flatter than the center. Or, the opposite situation may exist, depending upon the direction of overall pitch change. When this happens, the pattern seems to exist consistently throughout most unisons of the piano. This is especially noticeable after a well-tuned piano goes through humidity swings but ends up at the same humidity (and average pitch level) at which it was previously tuned. Then this phenomenon is very obvious, since when tuning the piano I find that most center strings are very close to correct already, while each left string is slightly sharp (or flat) and each right string slightly flat (or sharp). This consistent pattern makes it very easy to bring the piano back into tune, but why does it happen?

Anonymous Reader

A

From Jim Coleman, Sr., RPT

When a piano is returning to the same climatic conditions as existed when the piano was last tuned, the pitch level is very likely to be right on A-440. The piano has no doubt undergone some climatic changes since the previous tuning. If it experienced higher humidity, the soundboard (being crowned) pushed up harder against the strings causing the pitch to rise. Of course it is the speaking length which exhibits this pitch rise.

The speaking lengths of the three strings are equal (more or less). However, the lengths from the V-bar to the three tuning pins are different. The longer left string segment on a vertical piano can absorb more tension change than the shorter segment of the right pitch during humidity increase and is slower to drop back down when the humidity comes back to normal. The opposite is true for the shorter right string.

If a piano is recovering from a dry spell, the left string will be flatter than the right string.

On a grand piano, the right string has a longer segment between the agraffe and the tuning pin, and

therefore the right string will be slower to respond to humidity changes. It will also be slower to return to normal.

Jim Coleman, Sr. was instrumental in the development of PTG's standardized tuning exam, and is one of the most popular seminar and institute instructors.

If you have a question which you would like an expert in the field of piano technology to address, send it to the PTG Home Office, 3930 Washington, Kansas City, Missouri 64111-2963 or FAX it to 816-531-0070. It is important to include your name and a day time phone number.

We can not guarantee that all questions will be printed, however we will do our best to consider each. Questions should focus on any technical, tuning, or rebuilding aspect of a piano or questions dealing with successful piano business and marketing procedures. No questions concerning Piano Technicians Guild organizational business will be addressed in this column.

T&T Use Vacuum Cleaner Suction and Blower Hoses Together for Cleaning Pianos

A handy way to clean dirt from inside grand pianos is with a vacuum cleaner that has a blower outlet as well as a suction hose. Older Electrolux models work well. Get a second hose, and hook one to the blower outlet and one to the suction outlet at the same time. Attach a crevice tool to the blower hose. Holding them close together, use the blower to get the dust airborne and the suction hose to catch it. This gets dust out of hard-to-reach areas fast, without blowing it all over the room.

The blower hose is also useful when you need to remove a screw, paper clip, marble, etc. that's resting on the soundboard under the plate and causing a buzz. Go to a vacuum repair store and buy a balloon blowing attachment, sold by Kirby. This is an attachment for a regular vacuum hose that reduces it to a small nipple. Attach a three-foot piece of 1/4" plastic tubing to the blower hose, and you'll have a strong, concentrated stream of air that will blow small items out from under the plate.

Isaac Sadigursky, RPT
Westlake Village, CA

T&T Bass String Scraps For Splicing

Coils of piano wire are normally only available in sizes up to about .049", not big enough for splicing low bass strings. Solution? When installing a new set of bass strings, save the short lengths of core wire as you trim each string to length. This will give you an assortment of large-sized wires, perfect for splicing in the field. A clear plastic tube with rubber and caps (from a plastics store) makes a good carrier for the wires.

If you splice with round-nose pliers, you've probably found it difficult to work with the larger wire sizes. If so, try the Vise-Grip method shown in the PACE Technical Lesson Plan #5 in the January 1994 Journal. The Vise-Grips provide all the leverage you need to bend the wire easily, no matter how large it is. Follow the procedure shown for splicing plain wires, except when making the first loop in the repair piece. Instead of making a very small loop, you'll need to make one big enough to slide over the windings of the broken string. The easiest way to do this is to use the bass string as a form, bending the repair piece around the wood portion—using the Vise-Grips—to make a loop exactly the right size. The loop in the broken core wire can be small—just big enough to accommodate the repair piece.

T&T Technician Sees the light

If your household is anything like mine you are inundated by sales flyers and advertisements for one thing or another. Just a quick look through most of them eats up a lot of time and energy and produces little benefit to you.

Sometimes, the magic works through and you see something that sets off the ol' light bulb of inspiration. I experienced this flash of brilliance and couldn't wait to share it with you!

I had just spent a frustrating afternoon adjusting dampers in a grand of dubious quality that had the "talents" of a local jackleg "rebuilder" work on them before me. Never one to back away from a challenge (shows you what kind of dummy I am!!!) I came behind this "Behind" and worked to undo what he had done so it would do what it should do...!

The biggest problem was light. I couldn't get enough illumination in the keybed to give me enough light to work without getting in the way and/or burning me or always being too big and in the wrong place.

That night the answer literally fell into my lap as an insert sales flyer in the newspaper dropped out. I saw the light, if you'll pardon the pun, when I saw the small portable neon lamps the stores sold. Sizes offered were 4", 7", 11" and 14". These curio cabinet-type florescent lamps sold from 6 bucks up to about $20 or so. I got a four inch job with a power cord, but they also offer a lamp without a cord that has plug tines to go directly into your own extension cord.

Now I can get into the belly of the beast and direct the light where I want it, when I want it, safely and with little trouble. I plan to get a 7" version for more light and variety. Try it. It has certainly brightened (ouch!) my life.

Bob Bartnik, RPT
Richmond, VA

T&T Damper Setting Weight Helps Grand Damper Installation

When tightening damper top flange set screws during grand damper installation, the levers are normally

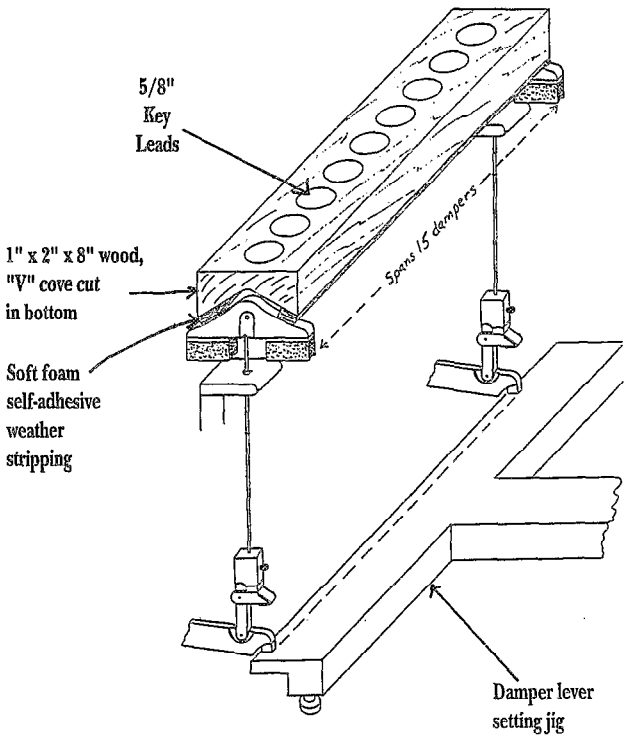
supported at the right height by a jig of some type. The dampers rest on the strings as the screws are tightened. However, once the jig is removed, the dampers settle down slightly lower onto the strings because of the weight and/or springs of the damper levers. The result is that some damper levers may sit slightly lower than intended.

A more consistent damper lever setting can be done by resting the weight device shown here on top of a group of dampers as their screws are tightened. This tool simulates the weight that will actually be pulling against the dampers when the lever support jig is removed, and so leaves the levers in a more even line. Another benefit is that the weight fixture helps keep the damper heads from rotating quite as much when the screws are tightened.

Use the softest foam weather stripping available, so the weight can conform to individual damper heads with an even force on each. 1/4" x 3/8" works well, run along both lower edges of the wood block.

Bill Spurlock, RPT
Vacaville, CA

Damper Setting Weight



TT&T

To tap or not to tap

That is the question. Many technicians consider it to be a routine part of a tuning job to go after those strings at the bridge pins, snugging them down, without thinking why they've ridden up. This is a waste of time if the bridge has negative front bearing, as many supposedly high-quality pianos do. So before playing taps, check your bearing. And make it a rule to when you do tap down strings to pretend that you're the one who spent all those hours planning that top, drilling those holes, and chiseling those notches. In other words, take it easy. More is not better.

Michael Travis
Greenbelt, MD

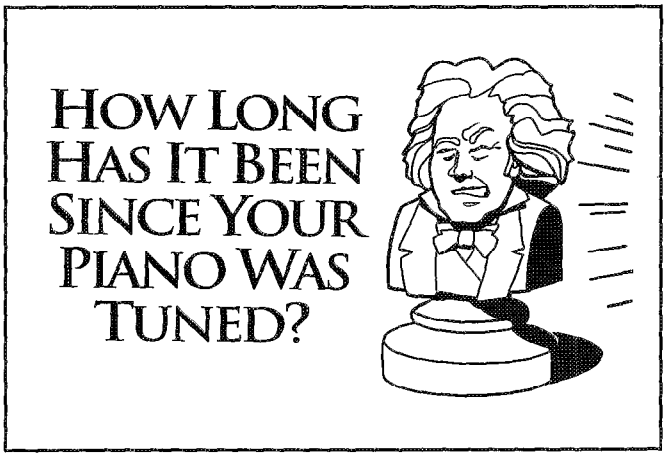
Don't Forget...

Reminder cards are an important addition to your marketing plan.

To order call

816-753-7747

One of six new designs available through the Home Office.



With 30 Years in the Industry...
WE KNOW YOU EXPECT THE VERY BEST - AND THAT'S ALL WE DO!

Exclusive Services to the Trade

- PIN BLOCKS: DUPLICATED OR FULL- FIT TO PLATE, GLUED TO CASE AND STRETCHER
- BRIDGES: SEND IN FOR DUPLICATION DOWNBEARING FIT TO PLATE
- DAMPER GUIDE RAILS MANUFACTURED
- ACTIONS: COMPLETE REMANUFACTURING, STEINWAY ACTION RAILS REPLACED
- KEY BALANCE RAIL WHOLE REPAIR
- SOUNDBOARDS: ACOUSTICALLY SHAPED, DESIGNED, CUSTOM FIT TO RIM QUARTER SAWN SPRUCE RIBS
- HARDWARE PLATING & POLISHING EXCLUSIVE ONESTI 'EVERBRITE' SYSTEM BRASS POLISHING AND COATING
- PROFESSIONAL WOODWORK AND REFINISHING
- CUSTOM WORK WITH EFFICIENT TURN-AROUND

Build your reputation as well as your profits!

TRADE LECTURES

The REBUILDING™ AUTHORITY

SPECIALTY TOOLS FOR THE TRADE

For the Finest Work Available... Anywhere

Ralph Joseph Onesti Piano Restorations

FAX/PHONE (610)833-1657

PACE

Professionals Advance through Continuing Education

LESSON PLAN

Technical Lesson #9

Vertical Regulation - Part 2

Alignment

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

This lesson will continue the preliminary steps of the regulation process, covering setting rough key height, key squaring and spacing, wippen alignment, backcheck alignment, and bridle wire adjustment.

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. Alternatively, action models can be used, although not all of the steps here will apply. For instance, key spacing cannot be done on a single note model.

Additionally, meeting set-up should include:

- Extra regulating tools
- Key leveling straight edges.
- Travel paper

Estimated lesson time:

Depends upon meeting format. If the steps in this lesson are to be done on an entire piano, allow three hours. If these steps are to be practiced on only a few notes of the piano, allow 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
- Phillips blade screw driver
- small flat-blade screwdriver
- screw starter
- travel paper - gummed brown tape, Avery correction tape, or self-adhesive labels and razor blade
- key punching lifter
- key squaring tool (soft metal drift or hammershank, and small hammer)
- wire bending pliers
- key leveling straight edge (48" long)
- devices to prop up sample keys (see figure 3)
- small pry bar (see photo 2)

Assigned prior reading for participants:

PTG Technical Exam Source Book (PTG Home Office, 816-753-7747), pages I.5 through I.8 and III.1 through III.3

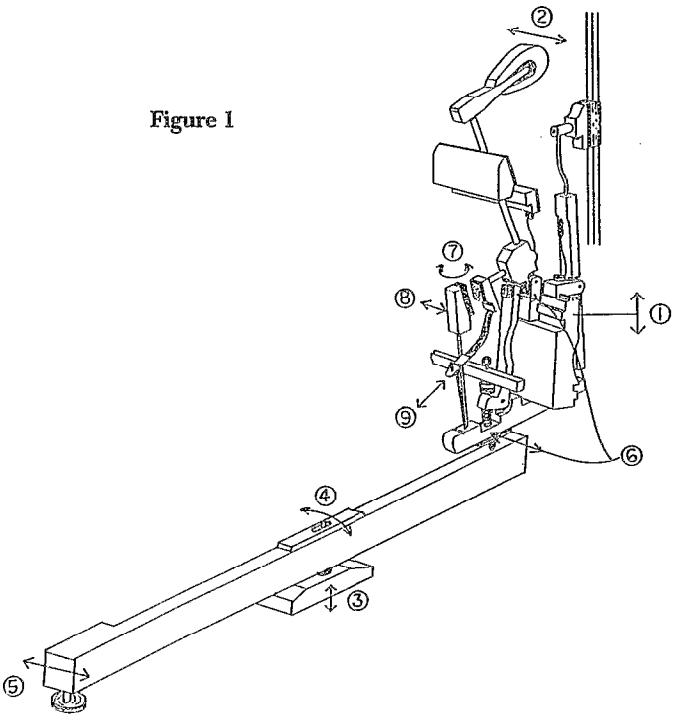
General instructions:

Lesson #8 began the regulation process with screw tightening, aligning the action properly in the piano, traveling and aligning hammers, and spacing hammers to the strings. A logical order of alignment steps will continue in this lesson, as outlined in figure 1. I suggest the following procedures:

Order of alignment steps—figure 1:

1. Adjust action height for proper strike point in high treble, then adjust all action supports for solid action seating.
2. Check hammer traveling, squareness to the strings, and alignment to strings.
3. Set rough key height by shimming balance rail.
4. Square the keys by bending balance rail pins side-to-side.
5. Space keys evenly apart by bending front rail pins side-to-side.
6. Space wippens to center jack tops under the hammer butts and wippen cushions over the capstans (exceptions: If action has dowel capstans, these can be spaced using wire bending pliers to align to the wippens. If action has stickers between the wippens and the capstans, adjust the lower sticker flange to align to the capstans.
7. Rotate backcheck heads square to the catchers.
8. Space backchecks to the catchers.
9. Adjust bridle wires.

Figure 1



PACE
Professionals Advance through Continuing Education
LESSON PLAN

Requirements for proper key height—figure 2:

1. Backrail cloth thickness must be such that capstan can be adjusted to correct height.
2. Balance rail pin should extend above key button to allow key squaring.
3. There must be enough clearance between keys and fallstrip or fallboard so keys can be lifted at least 1/16" at front. Fallstrip can be shimmed up if necessary.
4. Front key pin should extend at least 3/16" into front bushing.
5. Naturals should not be so high that bottom edges of keys are easily visible.
6. Naturals must be high enough that they are still well above keyslip when depressed.
7. Sharps should be approximately 1/2" above naturals. Sharps must be low enough that joint between sharp top and key wood is not visible above naturals, but high enough that they are still above naturals when depressed.

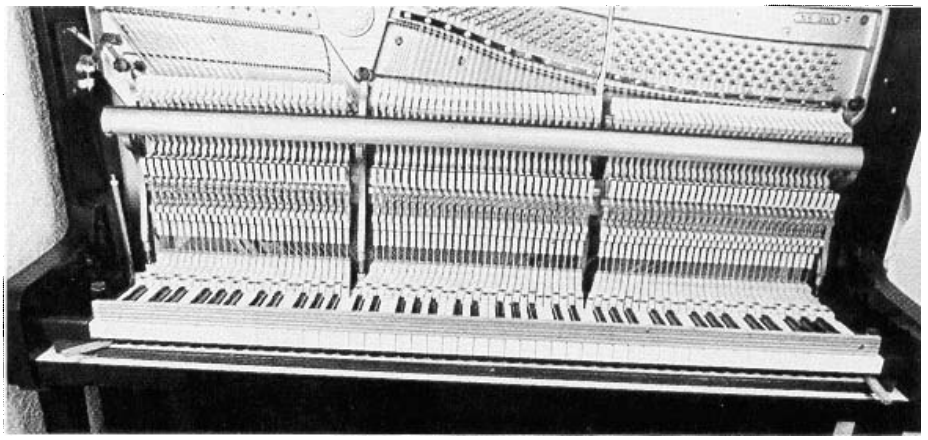


Photo 1: Set rough key height. Use the manufacturer's specification if available, or determine an acceptable key height using the criteria in figure 2. Prop up keys #1 and #88 to the desired height so they will support a straightedge, using a device such as shown in figure 3. Look for any gap between the straightedge and the keytops. Also, lift and tap the straightedge on the keys to spot any areas where keys are too high.

Adjust rough height by shimming under balance rail.

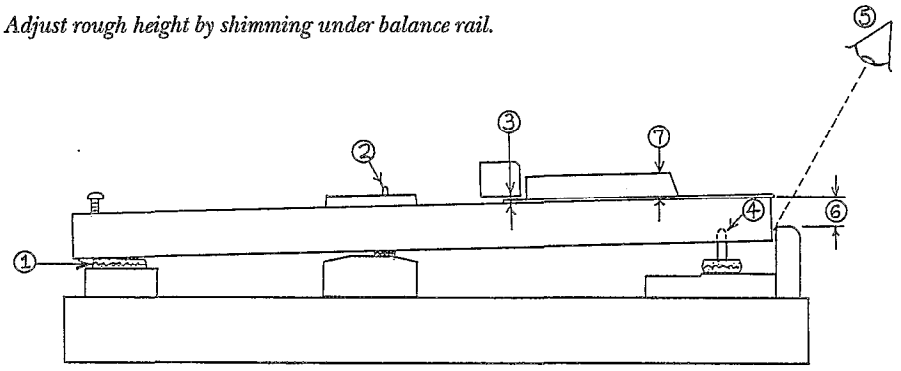
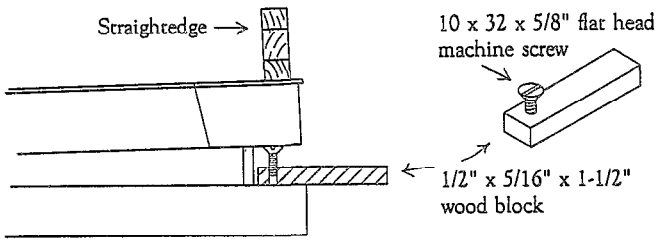


Figure 2

Propping up the end keys to support a straightedge—figure 3:



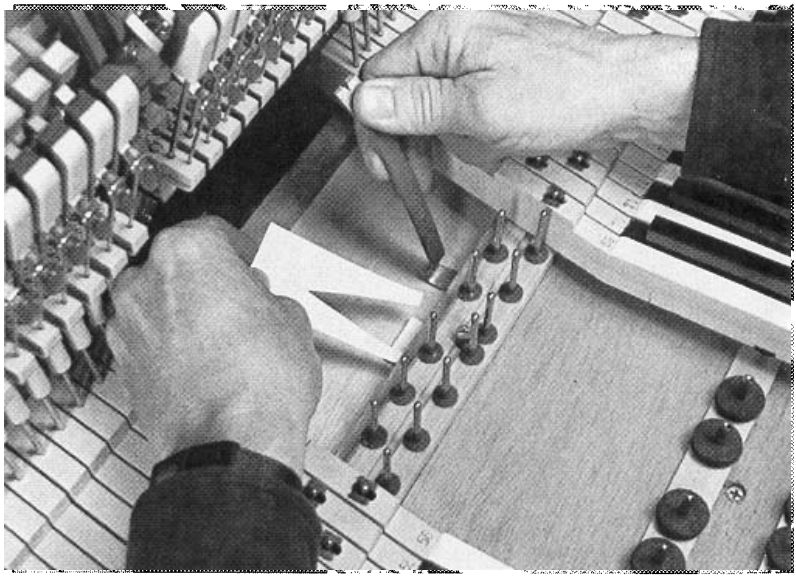


Photo 2: If the keys are generally lower (or higher) than the desired height, it is easier to adjust them by placing shims under the balance rail than by inserting punchings under each individual key. This will quickly get all keys close to the correct level, then individual punchings can be used later for the actual fine leveling. Most pianos have four to five screws holding the balance rail down to the key bed. To adjust the general key height in any area, remove a few keys to expose these screws, then loosen a screw and pry the balance rail away from the keybed. Insert or remove shims as needed (veneer, card stock, or paper may be used). Re-tighten all screws and recheck the key height. Note: some pianos have the balance rail permanently fastened to the keybed, so all key height adjustment must be done with punchings under individual keys. Baldwin verticals have support screws under the balance rail and corresponding hold-down screws from above. Accessible through holes in the balance rail, the support screws are used to set rail height.

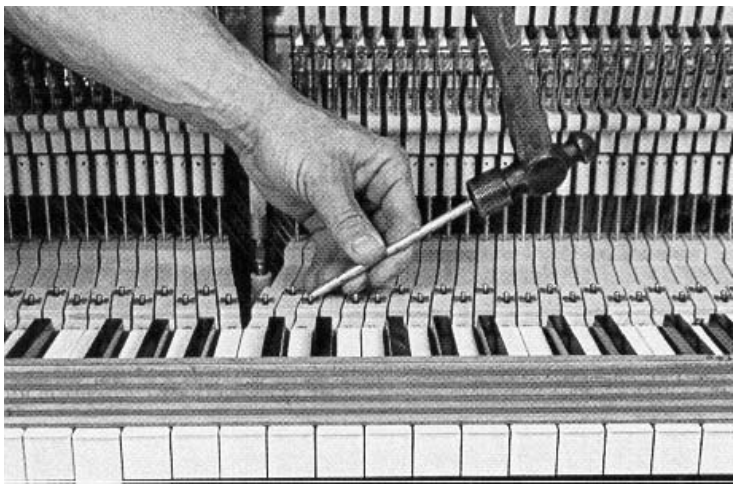
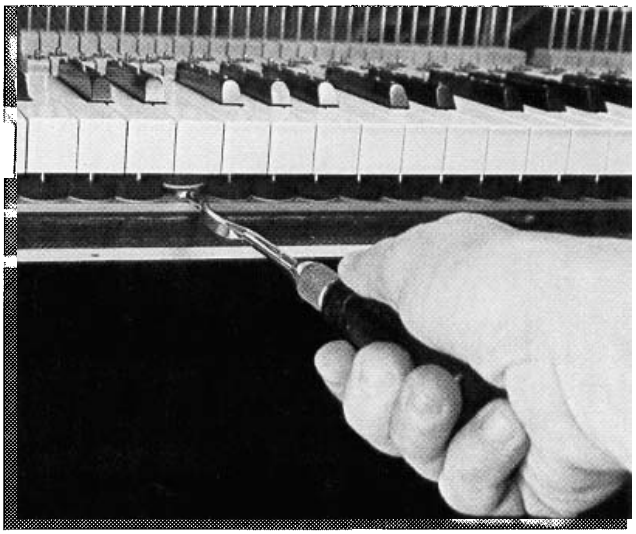


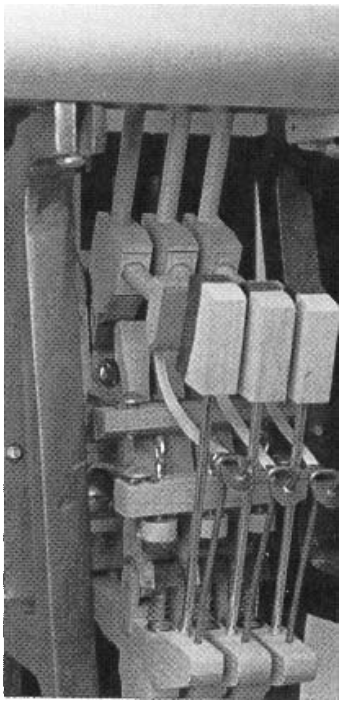
Photo 3: Square the keys. Look how each keytop aligns to the straightedge; square any keys that appear tilted by tapping the balance rail pin sideways with a soft metal or wood tool. Repeat this step for the sharps.

Photo 4: Adjust key spacing. Bend the front rail pins side-to-side as needed to leave equal gaps between all white keys. Place the key squaring tool *under* the front rail punchings to avoid marring the part of the pin where the key bushings ride. Repeat this step for the sharps, centering each sharp between the adjacent naturals.



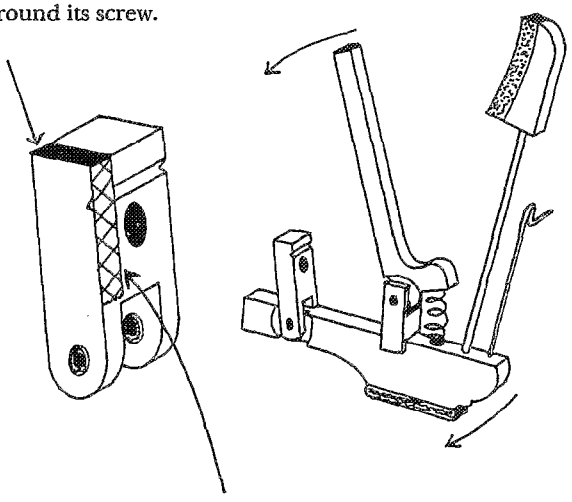
PACE
Professionals Advance through Continuing Education
LESSON PLAN

Photo 5 & Figure 4: Align wippens to center the jack tops under the hammer butt leather. Also, for direct blow actions with short screw capstans, align the wippen "heel" or capstan cushion to the capstans. (For actions with tall dowel capstans on wires, capstan-to-wippen alignment is accomplished by spacing the capstan, rather than by spacing the wippens. For actions with stickers, alignment is done by spacing the lower sticker flanges.) Note: the jack-to-butt alignment is most important and should be favored over the capstan-to-wippen alignment if a compromise must be made. Adjust wippen spacing by loosening their flange screws and shifting side-to-side. Or, if further movement is required, apply spacing paper under the flanges as shown in figure 4 to move either the jack top, wippen heel, or both.



Spacing Wippens—figure 4:

To space a jack top toward the bass without moving the wippen heel, apply spacing paper to the top bass edge of the flange. This will rotate the flange around its screw.



To space the jack top, jack tender and the wippen heel toward the bass, apply spacing paper to the bass edge of the flange. This will swing the entire wippen toward the bass.

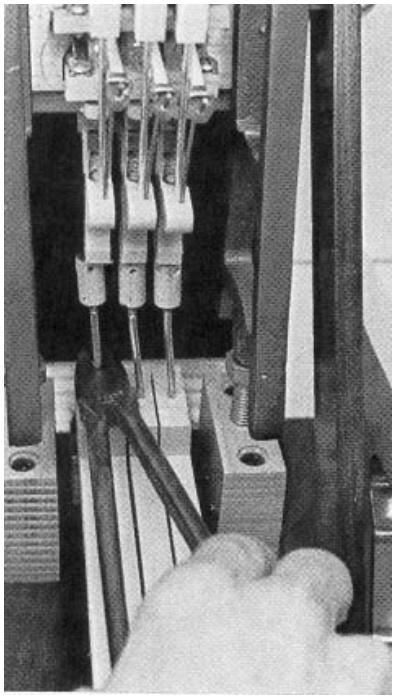


Photo 6: For tall dowel capstans as shown here, use wire bending pliers to center the capstans under the wippens. Use a spacing bend low on the wire, followed by a corresponding bend at the top of the wire so the capstan dowel is vertical.

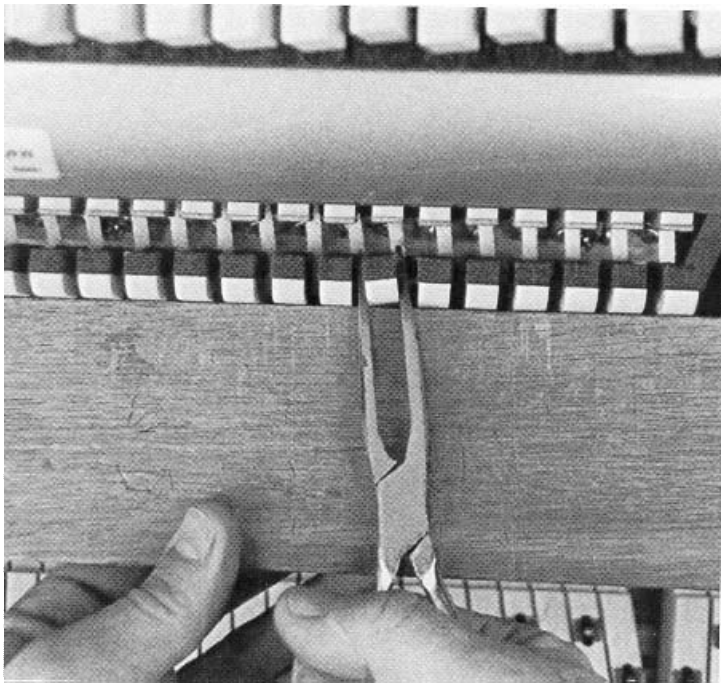
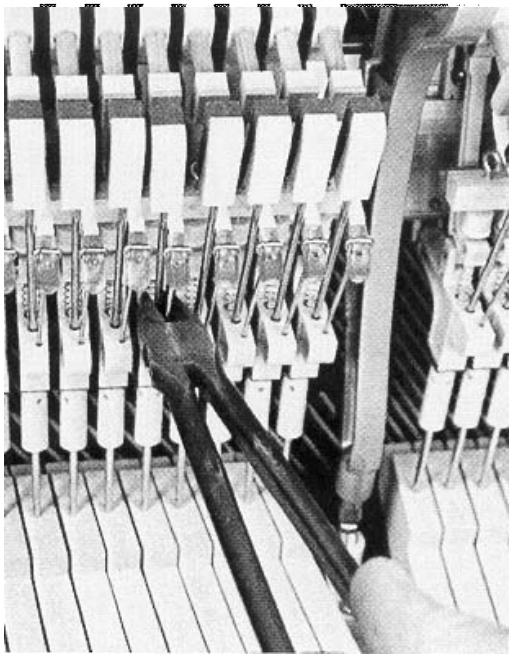


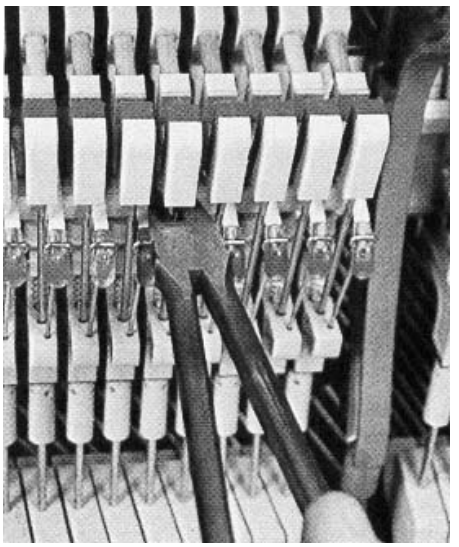
Photo 7: Check that all backcheck heads are rotated square to the catchers when viewed from above. Hold a straight-edge up against the heads to check, and use parallel-jaw pliers to adjust as needed.

PACE
Professionals Advance through Continuing Education
LESSON PLAN

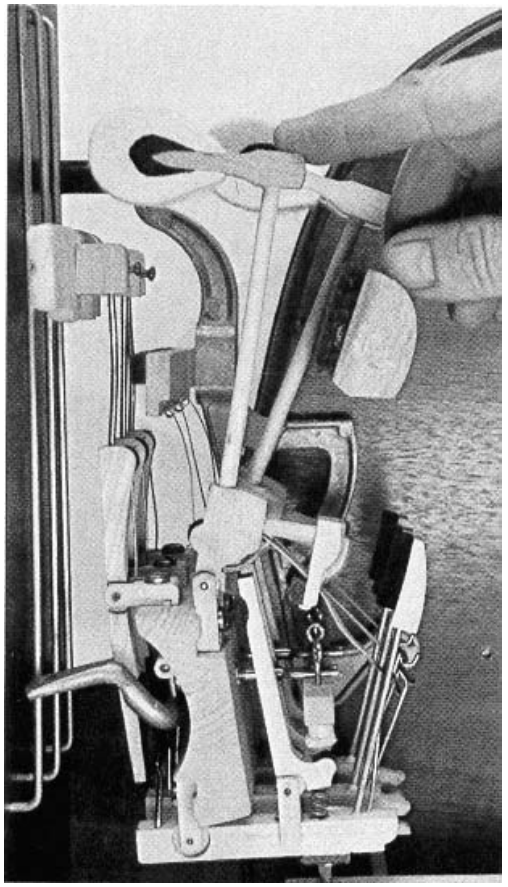


Photos 8 & 9: Align the backcheck heads to the catchers. **Important:** use only wire bending pliers for this job. Using a damper-type wire bending tool to twist the wires sideways will damage the wippen flange pinning!

Note that the plier jaws reach around the bridle wire to engage the backcheck wire. Being much smaller in diameter, the bridle wire will not be affected when bending the large backcheck wire. Play each key to place its hammer into check to evaluate the alignment. Use a spacing bend at the base of the wire, followed by a second bend at the top of the wire to align the backcheck head vertically.

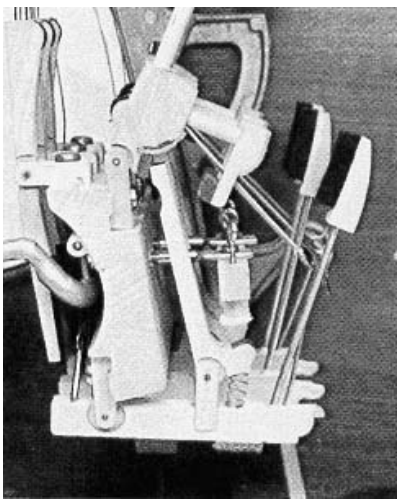


PACE
Professionals Advance through Continuing Education
LESSON PLAN



Photos 10 & 11: Adjust bridle wires. Bridle straps should be slack enough that when the soft pedal is used—pushing hammers half way to the strings—the bridle straps do not lift the wippens (otherwise, keys will wink or drop out of level when the left pedal is used). At the same time, the bridle straps must be tight enough that when keys are removed (or the action removed from the piano), the wippens cannot drop low enough for the jacks to fall beneath the butt felts. Be sure to check all bridle wires for possible interference with backcheck wires.

Notice the logical sequence of alignment steps: After setting the action location, hammer traveling and alignment, and key height, squaring, and spacing; the wippens—which lie between the hammer butts and keys—are aligned to these other already-aligned parts. Then after the wippens themselves are aligned, the backcheck wires are adjusted to match the catchers. Damper alignment remains to be done; however, this will be covered in a separate lesson devoted exclusively to the damper system.



Lesson #10 will continue the regulation process with choosing correct blow and dip dimensions.

PACE

Professionals Advance through Continuing Education

LESSON PLAN

Tuning Lesson #9

Tuning 6:3 Octaves

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) andaccess to a well-scaled large upright or grand piano for independent practice

In brief

In this lesson, participants will practice tuning and checking 6:3 octaves aurally; these are octaves in which the sixth partial of the lower note is the same pitch as the third partial of the upper note. Following the instructor's demonstration, each participant will tune several low midrange or bass octaves, and use the m3-M6 test to check the tuning. After each participant has had an opportunity to practice, volunteers will deliberately tune a few octaves in the bass, midrange, and treble as pure 6:3 octaves, and discuss pros and cons of tuning pure 6:3 octaves in each area.

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 and mutes, Coleman Beat Locator.

Home study assignment for participants

Review Owen Jorgensen, *Tuning* (MSU Press, 1991), sections 229, 230 and 231; esp. text on p. 754 and the six 6:3 octave tests on p. 759. Also, read *The PTG Tuning Examination: A Source Book,* "Learning to Pass the PTG Tuning Exam," part 6, "Bass."

Strip mute your practice piano to single strings in the bass and at least through A3 in the low treble. Use a Coleman Beat Locator to find the note corresponding to the 6:3 coincident partials in the octave A2-A3. Play and sustain the octave, lightly sound the note at the 6:3 location, and focus on eliminating the beats at that level by tuning the lower octave note. Repeat the exercise, tuning 6:3 octaves G#2-G#3, G2-G3, etc. down to A1-A2. Don't use any interval tests yet; you should focus on eliminating the 6:3 beats by playing the octaves only.

After tuning an octave's worth of notes this way, check your work with the m3-M6 test for 6:3 octaves as in the following example. This test employs a test note that is a minor third (m3) above the lower note of the octave. The test note has its fifth partial at the same approximate location as the sixth and third partials of the lower and upper members, respectively, of the octave. When the resulting 6:5 m3 beats the same as the 5:3 M6, the octave is pure, or just, at the 6:3 level. If the m3 beat speed is slower than that of the M6, the octave is wide at the 6:3 level, and you have to either raise the bottom note of the octave to speed up the contracted m3 interval, or lower the upper note to slow down the expanded M6. Conversely, if the m3 beat speed is faster than that of the M6, the octave is narrow at the 6:3 level, and you have to either lower the bottom note of the octave to slow down the m3, or raise the upper note to speed up the M6.

Example:
Applying the m3-M6 test to the A2-A3 octave:

1. With A2, C3 and A3 muted to single strings, tune A2 to A3, and eliminate the beats at the E5 level. Sound the m3, A2-C3; listen to the beat rate at the pitch of E5, and compare to that of the M6, C3-A3, also at E5. If the m3 beats slower than the M6, go to step two. If the m3 beats faster than the M6, go to step three. If the m3 and M6 have the same beat rate, you have tuned A2-A3 as a 6:3 octave.

2. If the m3 is slower than the M6: raise A2 slightly until the m3 beat rate increases. Go to step one.

3. If the m3 is faster than the M6: lower A2 slightly until the m3 beat rate decreases. Go to step one.

General instructions

Begin this session with some discussion of 6:3 octaves, what they are, where we normally use them and how we test for them. Point out that although today's activity (tuning pure 6:3 octaves) would not often be appropriate in an actual tuning, it's good practice that teaches control as well as proper use of the m3-M6 test. If you can tune a pure 6:3 octave accurately, you should have the skill needed to tune it a bit wide or narrow, as the piano requires. Make sure everyone

understands the m3-M6 test; have volunteers use a Coleman Beat Locator to analyze the test intervals.

Each participant should tune three notes in octave two as 6:3 octaves to octave three, and use the m3-M6 test to prove the results. Follow a similar procedure as in the example above; the instructor should prompt as needed to keep things moving, though keeping interruptions to a minimum. In each case, participants should first tune the unisons in octave three, and then strip mute octave two and tune the required three octaves, applying the tests to each one individually and in parallel series. After making adjustments, they can then pull in their unisons in octave two and recheck their work for consistency and stability.

If time permits after everyone has completed this practice exercise, get a volunteer to tune as 6:3 octaves C1-C2, C4-C5, and C5-C6. Using a SAT to set these octaves to just at the 6:3 level is OK for this demonstration, to save time or if appropriate tests are not available or audible (see following paragraphs). The purpose of doing this is to show the sound of pure 6:3 octaves in each area, and to instigate some discussion and experimentation on how you might improve the tuning (by altering the pure 6:3 octaves) and why.

Here are some additional 6:3 octave tests to try. In each case, you should tune the octave nearly pure at the 6:3 level with an aural focusing technique before using the test. Note that all of these require a ghosting technique (see PACE tuning lesson #5, *Journal*, 1/94).

Exponents in the names of the test intervals denote the coincident partial level. For example, a P5 has its first three coincident partials at levels 3:2, 6:4, and 9:6, which would be written as P5, $P5^2$, $P5^3$, respectively. Upper levels of coincident partials in test intervals almost always require use of a ghosting technique.

1. $P5^2$-P4 (a fourth partial test) — using a test note a P5 above lower octave note, and P4 below upper octave note. Ghost the test intervals by striking the note at the 6:3 partial location. Adjust the test note for a suitable beat rate and a contracted P5 and expanded P4. Tests 6:4 P5 vs. 4:3 P4.

2. $m3^2$-m10 (a seventh partial test) — using a test note a m3 below the lower octave note, and a m10 below the upper octave note. Ghost the test intervals by striking the note at the 6:3 partial location. May require use of sostenuto on the m10. Adjust the test note for a suitable beat rate and contracted test intervals. Tests 7:6 m3 vs. 7:3 m10.

3. $P4^2$-P11 (an eighth partial test) — using a test note a P4 below the lower octave note, and a P11 below the upper octave note. Ghost the test intervals by striking the note at the 6:3 partial location. Requires use of sostenuto on the P11. Adjust the test note for a suitable beat rate and expanded test intervals. Tests 8:6 P4 vs. 8:3 P11.

4. $P5^3$-$P12^3$ (a ninth partial test) — using a test note a P5 below the lower octave note, and a P12 below the upper octave note. Ghost the test intervals by striking the note at the 6:3 partial location. Requires use of sostenuto on the P12. Adjust the test note for a suitable beat rate and contracted test intervals. Tests 9:6 P5 vs. 9:3 P12.

5. $M6^2$-M13 (a tenth partial test) — using a test note a M6 below the lower octave note, and a M13 below the upper octave note. Ghost the test intervals by striking the note at the 6:3 partial location. Requires use of sostenuto on the M13. Adjust the test note for a suitable beat rate and expanded test intervals. Tests 10:6 M6 vs. 10:3 M13.

Correction: Concerning the table on page 21 of the January *Journal*, all the interval ratios shown that contain the number "11" as one element are in the wrong place. The correct location for these 11th partial ratios is one interval down the table in each case. For example, the ratio "11:10" and the series in the P4 row, 11:8, 11:4, 11:2 and 11:1 should all be moved to the A4 row. I have included a corrected table as well which contains a few other minor changes. I regret any confusion this may have caused *Journal* readers.

0 U 1:1, 2:2, etc.	12 8v 2:1, 4:2, etc.	24 D8v 4:1, 8:2	36 T8v 8:1
1 m2 12:11	13 m9	25 m16	37 m23
2 M2 8:7, 9:8, 13:12	14 M9 9:4, 13:6	26 M16 9:2, 13:3	38 M23 9:1
3 m3 6:5, 7:6, 12:10	15 m10 7:3, 12:5, 14:6	27 m17 14:3	39 m24
4 M3 5:4, 10:8	16 M10 5:2, 10:4	28 M17 5:1, 10:2	40 M24 10:1
5 P4 4:3, 8:6, 12:9	17 P11 8:3, 13:5, 16:6	29 P18 16:3	41 P25
6 A4 7:5, 10:7, 11:8	18 A11 11:4, 14:5	30 A18 11:2	42 A25 11:1
7 P5 3:2, 6:4, 12:8	19 P12 3:1, 6:2, 12:4	31 P19 6:1, 12:2	43 P26 12:1
8 m6 8:5, 16:10	20 m13 16:5	32 m20	44 m27
9 M6 5:3, 10:6, 13:8	21 M13 10:3, 13:4	33 M20 13:2	45 M27 13:1
10 m7 7:4, 14:8	22 m14 7:2, 14:4	34 m21 7:1, 14:2	46 m28 14:1
11 M7 11:6, 13:7, 15:8	23 M14 11:3, 15:4	35 M21 15:2	47 M28 15:1

NAMM Show '94

Part 1—Review of the 1994 NAMM Show *by Yat-Lam Hong*

Due to a schedule conflict, Jim Harvey had to miss the 1994 National Association of Music Merchants International Music Market, popularly known as the "NAMM Show." Jim had asked me to "sub" for him and write a report for the *Piano Technician's Journal.* The assignment brought back many memories when I had his job 14 years ago, especially the monthly mad scramble to crank out the column to meet publication deadlines. I can't believe I'm doing it again! Although I can't write like Jim, I'll do my best to produce a report that I hope will be interesting, informative, and not too biased. But if my personal touches come through here and there, I can't help it.

As usual, the 1994 NAMM Show was held in late January (21-24 this year) at the Convention Center in Anaheim, California, a city about 25 miles southeast of downtown Los Angeles. Anaheim is also the site of Disneyland, which is practically across the street. The Convention Center building that motorists see on Katella Avenue, a main street through Anaheim, is just the Arena. Connected behind that are five enormous exhibit halls, with a total area of 850,000 square feet. The NAMM Show was so big that it used all that space, plus the entire ground floor of the neighboring Anaheim Marriott Hotel. It took that much space to accommodate the over 800 exhibitors and 46,000 attendees from all over the world. The only music trade show that's bigger than NAMM is the Internationale Musikmesse in Frankfurt, Germany, which is usually in March.

Among the exhibitors are companies that sell pianos, synthesizers, guitars, metronomes, lamps, band and orchestral instruments, printed music, computer programs, theatre lighting and sound equipment, teaching methods, financial services, and just about anything having to do with the music business. Attendees can be seen wearing anything from tank tops to business suits with "I (heart) orders" buttons. With literally thousands of attendees trying out the many instruments on display, the noise level at the Convention Center was horrendous. However, the carnival-like atmosphere belies the fierce competition music merchants face, regardless of the products they sell.

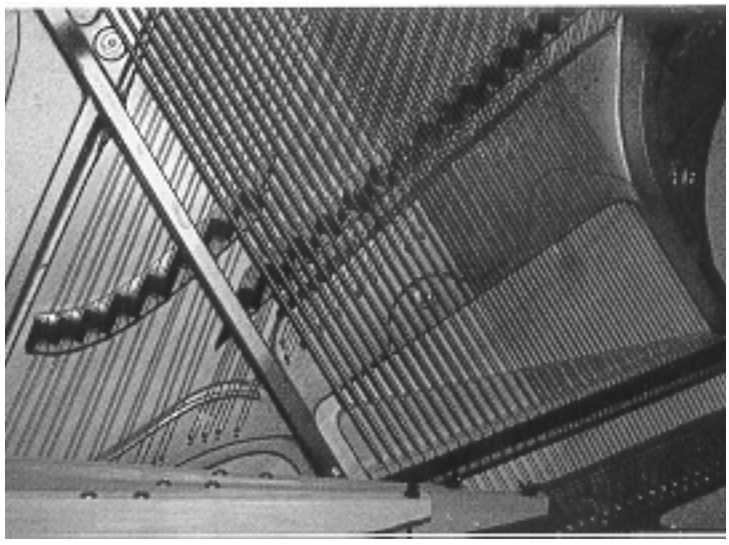


Photo 1

Attracting buyers' attention under such circumstances was no mean feat, and subtlety in advertising was not one of NAMM's fortes. Here, every exhibitor tried to outdo its competitors, each in its own way. Displaying cute signs and colorful banners or giving out free key rings are just not adequate anymore, but loud noises still are. Some percussion instrument manufacturers hired jazz drummers to literally "drum up" business by playing as loudly as possible. The scheme seemed to work: the louder they played, the bigger the crowds they attracted.

Other exhibitors resort to other gimmicks, such as using flashing strobe lights and live dancers. One company even capitalized on the earthquake that struck Los Angeles just four days before NAMM opened by offering broken chunks of cement and bricks free to anyone as "souvenirs from the epicenter." (There were few takers.)

Then there were the scantily clad women employed by some manufacturers that sell rock music-related equipment, many of whom wore high-heeled black leather boots, a broad smile, and not much else. One of them was such a knockout that she was asked repeatedly to pose for photos with her guitar, which was also a point of interest. The crowd got so big there that the walkway was at times impassable. (Well, great minds think alike.) But I'm not sure how many guitars they bought, or whether they even remembered the name of that company.

However, in Exhibit Hall D where most of the piano manufacturers were, things were a bit more dignified, which is what "D" stands for, I think. After all, we are dealing with a very traditional instrument, but even here, things are changing. PTG also had a

small booth here, manned by members of the Trade Relations Committee and the local chapters.

Covering a show like this was rather hectic, and my hit-and-miss approach to the assignment was out of necessity. I just started with any manufacturer, talked to whomever was available at the booth, and if nobody was there, I'd come back and try again, and moved on to other booths in the meantime. After three full days, I still hadn't gotten around to visiting every piano manufacturer present at the show, but I think I had seen and heard enough to have an idea of the state of the industry.

One company official glanced at my name tag, and wanted to know if I was with Yamaha. (Well, my name does begin with "Y" and it was printed in large bold type.) He must have thought I was an industrial spy for the Japanese manufacturer, and if I were, he probably wouldn't have talked to me. Obviously he didn't know that real spies don't wear name tags (or trench coats and sunglasses). Another foreign manufacturer thought I was there to solicit ads for the *Journal*, and kept saying, "We can't afford to pay"—until he finally realized what I was there for. The rep at another booth wouldn't even waste time talking to me. He gave me a pack of press releases and sent me on my way: he was too busy with dealers who might be interested in ordering his pianos. But overall, most manufacturers were eager to talk and show me the great things they are doing with their pianos. Whenever I suspected a manufacturer might be leaving out things he'd rather not say, his competitors would gladly fill me in on them. It's amazing how well they know each other.

Roger H. Weisensteiner, Kimball's Technical Manager, showed me the Tri-Modular bridge design that's now used on some of the company's grands and verticals. In addition to the usual two bridges, these pianos have a short, third bridge in the tenor section, which is meant to smooth out the tenor/bass break. (See photo 1-page 25). Scaled by Dr. Albert Sanderson, the Tri-Modular bridge design makes the tonal shift less abrupt and the piano easier to tune.

Kimball is using more and more medium-density fibreboard (MDF) in its pianos. Weisensteiner said this presents a great advantage over lumbercore boards, since MDF doesn't warp, crack, or "telegraph," where glue joints show through the crossbanding, veneer, and finish. Among other things, it's the perfect material for making grand lids. The 5' 8" grand is now also available in "Country French," which is either oak or pecan in French Provincial style.

To help technicians increase their income, Kimball now makes the "Whitney Classic," a 43" commercial console, which is to be sold strictly through RPT members of PTG. This piano has toe blocks, three-ply basswood soundboard, five-post back, and nine-ply hard rock maple pinblock. This experimental program is brand-new, and you will be hearing more about it in the future.

Any Kimball piano is also available with the PianoDisc system factory-installed, and the consumer has the choice of 3 models: playback only, with symphony, or with recording feature. According to Weisensteiner, PianoDisc's digital solenoids are far superior to the vacuum system of the old-style players.

The latest (1992) model at Bösendorfer is the newly scaled 213 cm (7' 0") grand. It has a 92-note keyboard, duplex scale, and a brighter tone than the regular Bösendorfer grands. It's designed to compete head-to-head with the Steinway B, and it fits right in the middle of the six Bösendorfer sizes: 5' 2", 5' 8", 6' 7", 7' 4", 9', and 9' 6".

Weisensteiner also informed me that the Hollein line of Bösendorfer grands is still being made. This is a special commemorative model, designed by Austrian architect Hans Hollein. Like other special models that Bösendorfer has built over the years, such as those for the 1867 Paris World Exhibition, or the model built for Emperor Franz Josef I, the Hollein is intended to be a very limited edition. A 7' 4" Hollein was at last year's NAMM, but if you've never seen one, it bears describing. This piano has solid brass legs and lyre, with black rim and red lid and fallboard. Embedded in the lid are patterns made of pure gold leaf.

The most striking feature is perhaps the fact that it doesn't have the traditional lid props. Instead, the lid is raised and lowered by a powerful hydraulic arm that's electrically operated and built into the rim's bass side. With this contraption, the lid can be opened to any position up to its maximum height, rather than just the usual short, medium, and long settings. (If power is off, the Hollein lid will be stuck in whatever position it happens to be in.) So far, Bösendorfer has built 35 Holleins toward an intended total of 100. If you've always wanted to own a Hollein Bösendorfer, better send in your order soon and beat the crowd. The price for a Hollein? Let's just say it makes regular Bösendorfers seem like super bargains.

Steinway & Sons and the Boston Piano Company had their exhibits out-of-town—at the Doubletree Hotel in Orange, about three miles away from the Convention Center. Their separate location may give the impression of "aloofness," but it serves an important purpose: to get away from the noise pollution at the NAMM, which some call the "zoo." Here, it's quiet enough to talk in a normal voice and be heard, although the quietness may make some people too self-conscious to try out the pianos.

Like Bösendorfer's Hollein, Steinway also has a new line of pianos with special styling, called the "Crown Jewel Collection." These are regular Steinway pianos with a total of ten exotic veneers. They are: East Indian Rosewood, Teak, Kewazinga Bubinga, Quartered Mahogany, Cherry, Figured Sapele, Macassar Ebony, Santos Rosewood, Bird's Eye Maple, and Figured Makore.

"We started the Crown Jewel Collection because we knew there's a need out there for Steinway pianos with exotic finishes," said Gary M. Green, Steinway's Technical Services Director. "Steinway realizes that its customers are unique individuals with unique tastes, especially when it comes to the finer things in life. We see this in the piano owners' desire to rebuild and restore the beauty of their old rosewood Steinways, for example. We keep in close touch with our 90 dealers in the United States, and they in turn keep in

close touch with their customers, who told them they wished Steinways were available in some exciting finishes other than basic brown and black. We listened, and now with our Crown Jewel Collection, good pianos don't have to be in basic brown or black anymore."

It took Steinway a while to come up with the Crown Jewel Collection, as these exotic woods have different degrees of hardness and brittleness, and they react to glues, stains, and lacquer differently from the usual walnut or maple. Sometimes, special techniques had to be developed to handle them properly. Veneer is used for the lids and rims, but solid wood has to be used for the legs, key slip, lyre, and cheek blocks. For these pianos, Steinway makes its own benches, otherwise the color, grain patterns, etc. might not match.

As far as the pianos themselves are concerned, Steinway still makes the same eight models: three verticals (45", 46-1/2", and 52") and five grands (styles S, M, L, B, and D). Now, any of these eight models is available in any of the ten woods in the Crown Jewel Collection, in any of the furniture styles (Sheraton, Queen Anne, Hepplewhite, etc.), and in either high-gloss or satin finishes. That makes quite a number of possible combinations that customers can choose from—in addition to all the usual ones.

The Macassar Ebony grand on display (made of *real* ebony wood, not just "ebonized"), with its natural brown streaks running through the black grains, was strikingly attractive. This is the same stuff that traditional black keys are made of. Now, imagine the *whole* piano made of that! But my favorite there was a sample of Kewazinga Bubinga. It has a rich grain pattern with a reddish tint to it, and you just have to see it for yourself. The Crown Jewel Collection pianos cost about 15% to 20% more than their usual counterparts, but for the upscale furniture-buyers, this should be no problem. These pianos caused quite a sensation among the technicians who were at NAMM. I hope Steinway will consider showing some of them at our PTG Convention this July.

The Crown Jewel Collection is just one of the things Steinway is doing to expand its customer base (or "market share," in business jargon). Among other things, Steinway now makes its own action parts, and whenever Steinway can't make them fast enough to meet the demand, it buys the rest from Renner of Stuttgart. And the demand for Steinway parts has been overwhelming, according to Green. First, they are needed for the new pianos Steinway is building. Then, more must be made available for Steinway's own rebuilding department, and for independent technicians who service older Steinways all over the country.

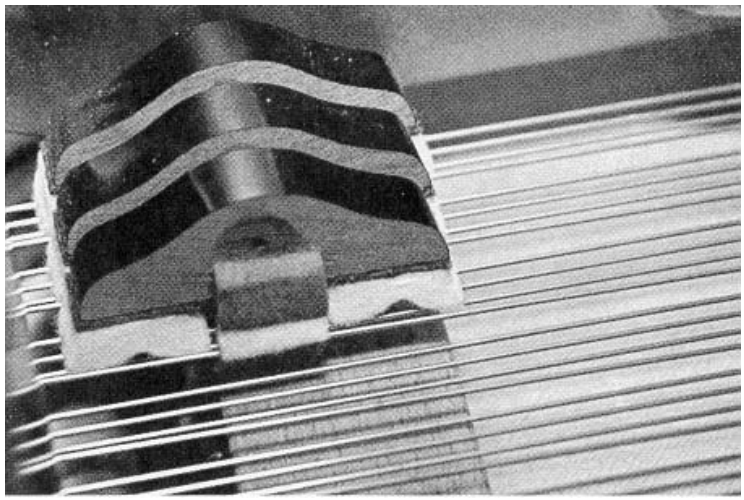


Photo 2

And, service has become big business for Steinway. Its concert and artist department has six technicians who do about 2,000 concert services a year, servicing Steinways in concert halls, recording studios, etc. in metropolitan New York. (A "service" is a service call that includes tuning, repairs, regulation, voicing, or any combination of these.) They're also responsible for training Steinway's own technicians who work outside the concert and artist department. In addition, there are six other technicians and three polishers who work inside Steinway Hall. (At Steinway, a "polisher" is someone who polishes pianos and does touch-up and various repairs on the finish and case.)

Then, there are eight technicians and one polisher who work in private customers' homes in and around New York City, servicing about 8,000 Steinway pianos, plus a very few non-Steinways which are trade-ins that customers bought from Steinway. (These are the only pianos of other brands that Steinway technicians service.) Most of these 8,000 customers buy a service contract from Steinway, which could include, say, four tunings, one regulation, two voicings, and one cleaning a year per piano. The exact service would depend on the package the customer chooses. Everyday, these field technicians go all over the city doing tunings, repairs, or whatever is called for. Their work is not too different from that of most independent technicians, but the service contracts provide a steady income and job security that most independents could only dream of. Maybe there's something here that we can all learn from Steinway?

Some smaller foreign exhibitors at NAMM grouped themselves under the sponsorship of their own country. Germany, for example, had a 5,000 square foot display, which was divided up among 22 German manufacturers. This was done as much for national pride as for saving money, since space and equipment rental at NAMM were both very expensive, so I was told. The German booth had four piano manufacturers (Julius Blüthner, August Förster, Wilhelm Steinberg, and Sächsische Pianofortefabrik which makes Zimmermann and W. Hoffmann) and one piano supplier (Louis Renner). The larger German exhibitors had their own private booths elsewhere.

I had a good talk at the Blüthner booth with Ingbert Blüthner-Haessler, the company president, and James M. Reeder of Lansing, Michigan, his U.S. distributor. Blüthner pianos have always enjoyed the reputation of having a singing tone, and I wanted to know how the company managed to do this while

many others have failed. Mr. Blüthner, the founder's great-grandson, said it was due to a combination of factors.

First, there are the aliquot strings in the treble. (See photo 2.) "But everybody already knows about that," he said. "Let's move on to the other things." He pointed out that, unlike most pianos where the angled hammers in tenor and bass are cut straight and bored at an angle to make them parallel to the strings, Blüthner does the exact opposite by having the hammers cut at an angle, but bored straight and centered in the molding. This puts equal amounts of felt and wood on both sides of the hammer-shank, and permits the hammer to strike the strings with even force across the width of the hammer. On impact, the stress on the center pin bushings in the hammer-shank is equally balanced, too. Instead of appearing "staggered," the hammer line for a Blüthner is straight, and so are the backchecks.

Then, there's the way the soundboard is crowned. While most pianos have a spherical crown, Blüthners have a cylindrical crown, and the treble bridge runs along the high point of this "cylinder." Blüthner also uses a soundboard press that's shallower than other manufacturers', and the Blüthner soundboard is softer, too. "And then, of course," Mr. Blüthner said with a wink. "There's the sublime craftsmanship." These all contribute to the famous Blüthner tone that's been variously called "rich," "warm," "velvety," "romantic," etc. It's a tone that contains more of the fundamentals than the higher partials, he said.

The company currently employs 60 people, and turns out about 450 pianos a year, half of which are grands, ranging from 4' 9" to 9' 2". Its three vertical models are: 43", 47", and 51". Mr. Blüthner's son, Knut Blüthner-Haessler, has been working in the company since 1984, and when the time comes, the fifth generation of Blüthners will be ready to carry on the proud family name.

At the enormous Yamaha exhibit in the Anaheim Marriott Hotel, Bill Brandom, Digital Acoustic Piano Service Manager, was eager to show me Yamaha's latest developments. Brandom was especially proud of the new model A1 grand (4' 10"). "They said you couldn't make a good-sounding grand this small," he said. "But we did it! This is the 'little brother' to the rest of the line, with sostenuto pedal, duplex scale, and is available in all colors and finishes, with or without the built-in Disklavier." This model will be available after April, 1994.

Another new model was the S-400E grand (6' 3"). This one has replaced the old S4. Like its predecessor, the S-400E is built at Yamaha's concert grand factory, which is totally separate from the regular grand production line. Among other things, it has Yamaha's exclusive "Humid-a-Seal" pinblock, which is mortised into the front beam for structural unity. Unlike the mass-produced grands, this mostly hand-made piano has a clear and powerful tone that belies its size. Equally impressive was the model S6 (6' 11") in the same series, but I didn't get to try it: the line was too long.

Yamaha has also made numerous changes to its vertical pianos. The new U1 (48") and U3 (52") models have been redesigned. To better control down-bearing, they now use the same plate-mounting system as that of the F-series grands, and it's adjustable, too, but only by experienced technicians. These pianos also have more back-posts, which are now doweled and glued into the frame to minimize tone loss. "All these differences can be better heard than seen," said Brandom.

What fascinated me the most was the vertical piano in the "Silent Series." It features the "QuieTouch," which is operated by the middle pedal. Unlike the traditional "silencer" (a strip of felt that comes between hammers and strings), the QuieTouch is entirely electronic. The main purpose is to silence the piano, so the pianist can play without bothering anyone else. Once the middle pedal is depressed and locked in, the normal acoustical function of the piano ceases, and magic takes over.

In the QuieTouch mode, the pianist listens to the digitally sampled tone of a Yamaha concert grand through the headphones. It may be sacrilegious to say this, but I have to admit the piano sounded much better through the headphones than it did acoustically. Not only was the electronic tone in stereo, but the pianist had a choice of three reverb positions: normal room acoustics, small hall, or large concert hall. The pitch of the piano can be altered from minus 50 cents to plus 50 cents in 1.2-cent increments. Playing along with a recording that's off pitch is no problem. The electronic keyboard is so sensitive that notes in very fast runs that might possibly miss in the action all came out perfectly. This piano actually makes the pianist sound better than he really is. The instrument also has direct-recording capability, and it can be played through loudspeakers, if one chooses to. It's really two pianos in one: a regular 48" U1 and a Clavinova.

Some pianists might be bothered by the fact that, to accommodate the electronics, the normal let-off has to be set at 12 mm (about a half inch). So far, there's been just one model in the Silent Series: MP100, which is modeled after the 48" U1. If consumers show enough interest, QuieTouch will be made available in other models in the future. The MP100 sells for about 30% more than the regular U1, but that hasn't deterred the Japanese consumers: 35% of Yamaha verticals sold in Japan since September of 1993 are the model with QuieTouch.

Bill Brandom was quick to point out that "silent" feature was not an original idea from Yamaha. What Yamaha did was to take that concept, and refined it into all those spectacular features found in the MP100. Brandom said that, among other manufacturers, Steinberg also had a similar device. I decided to check out Steinberg next. Back to the German booth in Exhibit Hall D.

Wilhelm Steinberg is a piano company in Eisenberg, Germany, about 40 miles southwest of Leipzig. Holger Huhn, the business manager, was happy to tell me more about the electronic silencer idea. According to him, this was originally the invention of Furstein, an Italian company, that was used on some Kawai and Baldwin pianos, too. The device permits pianists to play quietly late at night, thus the name "Night and Day." But Steinberg took the idea a step

further. By incorporating the Roland SC55 Sound Expander into its electronics, Steinberg pianos could, through optional speakers, produce 128 different sounds, including acoustic piano, electronic piano, harpsichord, guitar, string instruments, church organ, accordion, orchestra, etc.

Although quiet practice is a purpose of the silent feature, Steinberg's main interest is to give pianists the enjoyment of playing on the piano the current "hits"—just the way he hears them on radio or recordings. That's why it makes all these sounds available to the pianist. As if 128 sounds were not enough, the Steinberg pianos could also produce sound effects, such as the ringing telephone, helicopter noise, applause, etc. for use in recordings or theatre settings.

Steinberg makes two lines of vertical pianos, the Capriccio and the IQ (for "Identifikation mit Qualität"). Although the name Steinberg may be new to some, its predecessor was founded as far back as 1877, said Helmut Altmeyer, the company president. With its recent purchase of the Thüringen Keyboard Company, Steinberg now makes keyboards for other piano manufacturers, counting Bechstein among its customers. "In these recessionary times, we're the only German piano company that's expanding, rather than shrinking," Altmeyer said. "We had 80 employees last year, but 112 now." Steinberg is an expensive piano, but Huhn justified the price this way: "Do you buy a coat because it's cold outside, or because you like it? We cater to customers of the latter type."

Founded in August of 1991, the Fandrich Piano Company in Hoquiam, Washington, is a relative late-comer in the piano business. However, with its patented Fandrich Vertical Action, this upright piano is "built like a grand, sounds like a grand, and plays like a grand." For its short existence, it has garnered much publicity from the media, such as National Public Radio and the CNN Channel.

Fandrich pianos use the action invented by Darrell Fandrich, and the company is owned by his brother, Delwin Fandrich, both of whom are well-known among piano technicians. With 11 employees, the company puts out an average of two pianos a week. From start to finish, each piano takes anywhere between eight to 12 weeks. The company is expanding, and will soon be moving to a 13,000-square-feet facility. It makes only one model: the 48" Artist, which is available only in black (or as Del Fandrich put it, "either black or ebony"). Weighing 604 lbs., this is one of the heaviest verticals on the market, and it has some unique features.

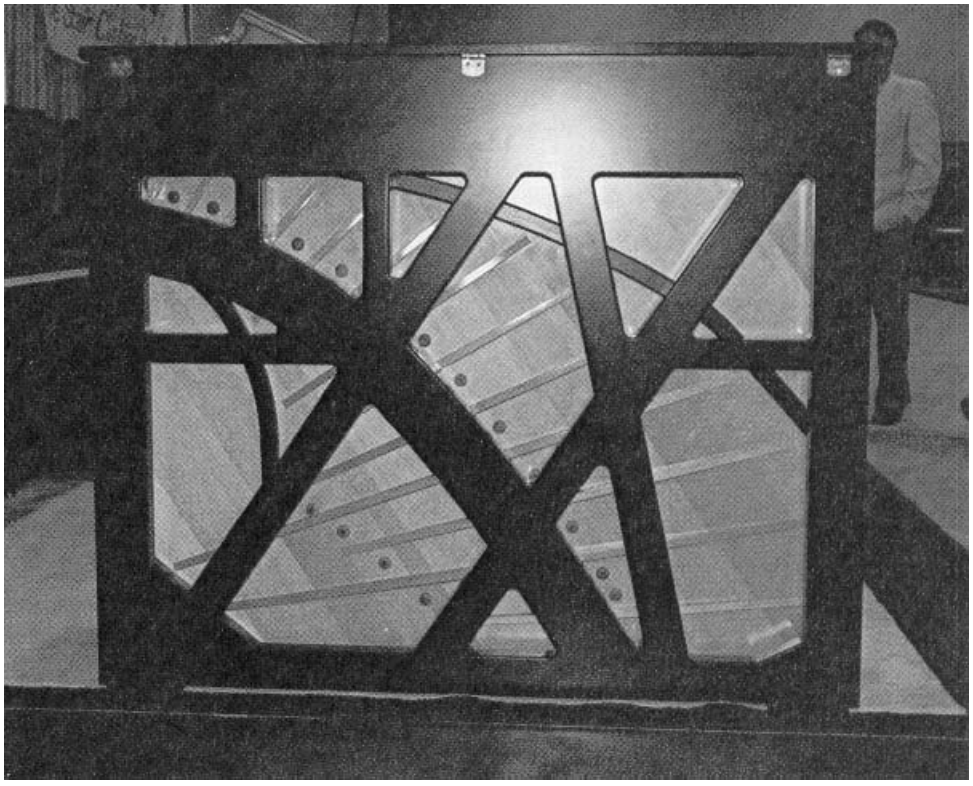


Photo 3

Its back is made from a single solid panel with no glue joints. (See photo 3.) According to Del Fandrich, this provides better support for the soundboard, stability of structure, and dampening of the plate. There's no brace for the tenor/treble break, which permits a more uniform tone. The massive plate also eliminates the need for the action bracket in that area. All 88 notes have modified agraffes, and the heavy silicone bronze pressure bar provides better string termination, which keeps the string energy from "bleeding" into the plate. An "impedance bar" helps control the frequency response in the tenor section.

With an area of 1,547 square inches, the Fandrich soundboard is a lot smaller than that in other pianos of comparable size, but Del emphasized that, for good tone, freedom of movement in the soundboard is far more critical than its size. Unlike most pianos, the bottom of the Fandrich soundboard actually "floats" (it's not glued down), and its vibrations can be readily felt when the piano is being played. Another secret to Fandrich's tone is in the down-bearing, which Del refused to discuss. I can understand his cautiousness in this respect. Fandrich pianos use Abel hammers from Germany, which are made to Fandrich's specifications. Although these hammers are soft, Fandrich uses no lacquer or any other kind of hardening agent, because, he said, "the brilliance is already built into the piano." Judging by the enthusiastic response of those who have played his piano, Del may be right.

Part 2 of this feature will appear in the June issue of the Journal.

Building *Tone* In The Soft Hammer

By Nick Gravagne, RPT
Contributing Editor
New Mexico Chapter

I find it interesting, ironic, and even amusing that choosing a replacement set of hammers for top-flight pianos, Steinway in particular, is often fraught with consternation, confusion and stagnation. I find this interesting at a time when the proliferation of technical exchange has reached an unparalleled high, and yet ironic in that, as earnest as the hammer suppliers have been to convince us that their product is the best for the job, may technicians remain skeptical and even unconvinced. Finally, we must admit that a certain comedic element is afoot; have you witnessed, for example, those of us from "piano seminary" solemnly engaged in discussions lasting deep into the night about how many felt fibers can exist on the head of a pin. Couple this with intra-industry gesturing, protectionism, and the subjective nature of personally relating to piano tone and performance, and it's no wonder confusion has flourished in the minds of many technicians about how to approach an action rebuilding job.

Does this sound too hard? It isn't meant to. It's all quite understandable actually. Summed up, what we see happening in our little industry is nothing more than business in action, manufacturers and suppliers pitching their products as "the best." The problem for the technician, though, is in sifting through all the hype (when it's there) and misinformation. And good information misinterpreted and wrongly used becomes "bad information."

So, where are you going with this...Nick?!

Quite. What does all this have to do with building tone in the soft hammer? Much, since the practice of hammer hardening is vehemently opposed by some of the finest technicians in the world, yet proposed by other, equally fine technicians. How can this be? Both sides can't be right. Well, in a way they can. Remember, our work can be quite subjective, and the expectations of both technicians and customers must remain a driving force in what decisions are made.

Case in point. I have a customer with a Steinway S (manufactured in 1938 or so) who insists on having a new set of Steinway hammers installed. She says she want that Steinway tone, strong but mellow. At present, her little grand sounds like a subway train screeching to a halt, and that's at pianissimo. At forte blows her German Shepherd is outa there. Worn and hard hammers are the cause.

Now, when it comes to obtaining a mellow tone from a Steinway, there is no doubt that Steinway's New York hammers will work. The fundamental tone may be there, but it may lack power, and the overtone series may not be coloring the timbre enough. The challenge, then, is in getting the power, attack, and coloration along with the sweetness. Usually, this can only be done by hardening the hammer with lacquer solutions or keytop solutions. In addition, do not doubt—repeat DO NOT DOUBT—or ignore the fact that the Steinway egg-shaped hammer top (parabolic) along with relatively narrow shoulders are important aspects of Steinway tone building. Although filing and shaping at the factory is usually done before lacquering, the Steinway shape is sometimes easier to sculpt when the fibers have been lacquered. Do not get hung up in the "layers theory" of hammer integrity. The layers theory suggests that filing through one layer of felt into another will hurt the tone by leaving dead layers of felt at or under the shoulders. The Steinway shape is more important than felt layer integrity. Besides, unless seriously overdone, parabolic shaping of the Steinway hammer will not compromise the felt layers.

Steinway's new technical manual

Within recent months Steinway has published the "Steinway & Sons Technical and Reference Guide." The guide includes six sections: 1) Technical Services Manual, 2) Parts catalog and price list, 3) Additional technical/historical, 4) On-Site Concert Service, 5) Restoration Center, and 6) Steinway Technical and Education Program. If you service or rebuild Steinways, or plan to, you will want this three-ring binder reference book. It is easily worth the small price.

The technical Service Manual section covers regulation and voicing and includes many fine photos. It is the voicing instructions regarding lacquering and needling that concern us here. Extensive quoting of the guide would be inappropriate and redundant. Still, the typical technical manual being what it must be—generally brief and to the point—there are certain procedural elements and wording in the guide that could stand some embellishing in a wider forum such as the Journal.

Tonal power

A very illuminating turn of phrase! Descriptive and useful at various levels of perception, from literal to poetic. I first heard of it from Wally Brooks. Now before we can continue with a discussion of Steinway's "softer than the common

hard-pressed hammer," we need to have another look at the typical hard-pressed hammer relative to open and closed tone. You see, what you do with a new Renner hammer is very different than what you do with a new Steinway hammer. Everyday serious mistakes are being made in this regard, as you will see in a moment.

A closed tone does not sing, even though the belly system is ripe and full. A tone which sings is a tone which soars and sustains when the hammer strikes the strings. After the explosive attack, the tone swells and becomes liquid. It seems electrified, steamy and suddenly energized, like pressing a hot iron to a damp cloth. Singers know all about opening the tone. They know to relax their mouths and tongues, yet open their mouths wide, to sing over their teeth, and from the belly.

Regarding piano tone, open or closed, we are back to a simple cause and effect. Closed felt—closed tone. Open felt—open tone. Tight felt—tight tone. Springy felt—springy tone. It is important to recognize here that, generally speaking, only hard-pressed and dense hammers that haven't been voiced produce the closed tone. Such quality hammers come from manufacturers un-doctored by any hardening agents, or treated to steam or excessive heating operations which coagulate the fibers into a hardened mass. Rather, the felt is tightly wrapped over the molding creating greatest tension on the outside of the hammer surface, greatest compression at the core, and, in between, a nonlinear spring condition whereby degrees of tension and compression interact.

Some examples of such hammers are Wally Brook's Nu-Tones and Encores, and Renner's Premium Blues. There are others as well. When the tone seems closed, or tight, somewhat thin, perhaps bright, not carrying well, it is because (as explained in previous articles) the felt is too tight, too dense, too stiff. Deep needling the shoulders, and perhaps sugar-coating the top will relax the felt, reduce density and stiffness. The tonal result is that the fundamental and overtone spectra will increase in sustain. The note will sing better and carry better. Brook's Encores and Renner's Blues respond well to such treatment because the felt fibers haven't been either "melted" together by heat or steam, or "glued" together with hardeners. In short, needling works. Incidentally, both Wally and Rick Baldassin (Renner) offer excellent booklets on how to work with their respective hammers. Next we must consider...

Hammer contact time

To simplify some complicated concepts, the following rules exist:

- *the shorter the period of time that the hammer stays in contact with the string, the greater number of upper partials will sound.*
- *hammer contact time will be short for two reasons;*

a) at a forte blow the hammer bounces off the string more quickly compared to a less hard blow. Hence the presence of higher partials on a hard blow, and the relative lessening of high partials on a soft blow.

b) a hard, or dense hammer at any intensity of blow gets away from the strings faster than a softer hammer at the same given blows. Again, short hammer contact time equals a greater number of upper partials.

Try this simple experiment in your shop. Moderately smack two steel hammer heads together; you will feel the instantaneous separating of the two heads as they jump apart. Now try the same thing using two rubber hammers, or one rubber hammer and one steel hammer. The jumping apart is not nearly as dramatic as with two steel hammers. In physics the meeting of hammer to string is considered to be a basic problem of momentum, impact and collision of two bodies. It is well known, and can be proven mathematically (and intuitively) that two perfectly hard and resilient bodies (say lead) will permanently indent each other and barely separate at all. The hardness and resilience factors of piano hammers and strings fall in between the extremes of steel and lead, but the mechanics involved are identical.

We have now arrived at some common mistakes made when working with new Steinway hammers.

The opening of tone mistake

Scenario: A new set is hung and the tone lacks power and presence everywhere, but especially in the first capo area. The technician, who has been to one of Wally's or Rick's fine classes—classes dealing primarily with quality, hard-pressed hammers—mistakes the lack of power with that of a closed tone. The shoulders are deep needled to open the tone. The hammers are killed in the process.

The "I'm gonna go easy on the lacquer" mistake

Where power is lacking due to a soft hammer, superficial and conservative dosing of hardeners to the outlying layers of felt will not work. The juice must flow all the way to the molding, and wick into the

strike point areas. Or, as you will see later, a generous juicing right to the strike area is required. Timidity here is a liability.

The "I'm gonna hose these puppies down" mistake

Repeated and extra-heavy juicings (3:1, 2:1) will ruin the hammers. Taken too far, the hardening cannot be voiced out or powered down The fibers are simply glued together and cannot be separated. And the anti-lacquer activists have yet another horror story to report.

The "Hang 'em and play 'em right out of the box" mistake

Years ago when I was into balsa wood model airplane building there were two kinds of kits available. The first, where I had to cut out all or most of the pieces from thin wood supplies, and the second, where the pieces were pre-cut for me. Where I had to do my own cutting the pieces came supplied over-size; too long and wide, etc. I had to cut them down and trim them to make them work. Steinway hammers are like this. They come oversized and require cutting and shaping and trimming to make them "fit." The top sections of hammers especially may require a substantial amount of felt removal before they will work right. Most hammers of the hard-pressed type are like the second model airplane kit; they are pre-cut and require assembly, glue and finishing.

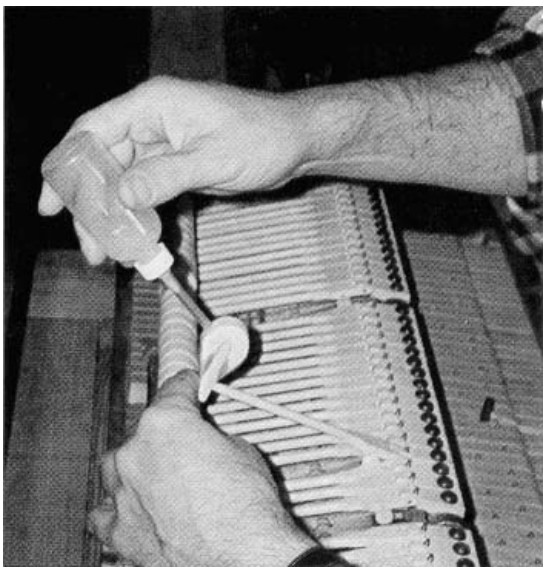
Nuff said for now.

Hardening solutions

In their manual Steinway mentions two hardening solutions: lacquer with thinner, and the acetone-keytop solution. The keytop solution is stated as eight ounces acetone to one plastic keytop (8:1 piece). The advantage of the keytop solution is that overnight drying is not required, an important consideration when you need rapid results such as in a concert situation. The lacquer to thinner solution is stated as approximately four parts thinner to one part clear lacquer (4:1), and it is the use of this solution which is explained in the manual. Pianotek sells plastic keytop pellets, and the suggested mixture is 1 teaspoon of pellets to 4 oz. of acetone. The stuff is dry in 30 minute or less. Keytop solutions are used exactly the same way as lacquer solutions. All solutions may be mixed stronger or weaker depending on needs. Note that the mixtures mentioned here should be considered strong, or moderately heavy. Steinway's mixture of 4:1 is a suggestion based upon what *typically* works on their *new*, untampered-with hammers. Implied here is yet another reason why lacquering has become a questionable practice for some. Example: A technician finds a note which is a bit dull. Minor filing and shaping does not increase power. Out comes the bottle of 4:1, the application is made and the tone goes into orbit! Of course it would. And reversing the condition may be impossible. Hardening a hammer that is a *bit dull* requires a lighter solution, say 8:1, for instance.

Reinforcing the shoulders

Quoting the manual, "This (lacquer) mixture is *normally* applied to the upper and lower shoulders of the hammers, while keeping the solution application away from the strike point. This solution will be *absorbed* into the hammer core and make its way up towards the strike point." [emphasis mine] See photo 1 and 2 for application of solution using a hypo-oiler. The solution *must* be allowed to penetrate all the way to the core (felt area around the molding), and not just saturate and cling to the surface layers. Also, the solution must be allowed to dry overnight before testing. Obviously, a warm and dry environment will aid the drying.



Reinforcing the strike point

What! Lacquer right on the hammer top?! It's been going on for years. Steinway says of the practice, "Doing this will build up the *power* rapidly. It will also result in *excess noise*." [emphasis mine] Again, the solution should penetrate deeply and be allowed to dry overnight.

Reevaluate for power

Using forte test blows the tone is checked for power and loudness. Since lacquer will have been absorbed into the crown, or applied directly to the crown, the power enhancement will be accompanied by a *noise* component. We'll talk about noise in a moment. It is important at this point "to differentiate between 'power' and 'noise'...Decide if more power is needed and where (in the scale). Apply another application of lacquer solution, if needed."

Noise

In past articles of this series it was explained that a strong fundamental is crucial to good piano tone, and that a loud, too-bright and pingy tone predominates in upper partials at the expense of the fundamental, or at least a proportionate part of the fundamental. A poor quality of tone will be overloaded with very high partials which are discordant and competing. The resultant wave form is choppy and discontinuous, and manifests itself in the air as metallic and buzzing—as noise. Remember,

the physicists tell us that wave forms of noise, as compared to musical tones, are not regular and repeating. A metal flagpole crashing to the ground makes noise; but strike the upright flagpole with a rubber bat and hear the "music of the spheres."

Enough's enough

When hardening hammers for power there comes a point of diminishing returns. The tone may get louder and louder with each successive treatment of lacquer; after a while, though, the tone becomes excessively noisy, thin, and too bright. It is at this point, or just short of it, that hardening treatments must stop. Imagine the volume control on your stereo. When the volume is too low the audio effect lacks power. You turn up the volume, more power. Turn it up again, yet more volume and power. Eventually, though, the high intensity sound will distort, and even shake the speakers. You are overdriving the system. In terms of tonal power, the piano is giving all it has to give when distortion in the form of noise becomes apparent. Needling must now begin in order to remove the noise *while retaining the power.*

Needle placement

Steinway's guidelines regarding where to stick needles is simple to comprehend. You needle first in the areas where lacquer was applied! If the solution was mostly applied to the shoulders and allowed to wick in the crown area, then deep needling with three needles begins in the shoulders. Stitches can be taken close to the hammer crown but not directly into it with multiple needles. If the strike point has been lacquered directly there can usually be heard a "lacquer noise" in the tone. "Crown needling," or needling directly down into the strike point, will be required. Use *one* long needle and drive it deep into the hammer crown at the three places where the hammer contacts the strings of a unison. Be aware, however, that of the three unison strings, only one may be creating most of the noise. Find out by muting and isolating.

Conclusion

The Steinway manual contains more hints, guidelines and pictures. Particularly helpful are the drawings of actual-size (or close enough) hammer shapes for bass, tenor, mid-treble, and upper treble. Suggestion: copy the page with the drawings, cut out the individual hammer shapes and place them on actual hammers at appropriate places in the scale. This will guide you in your shaping work.

Since so much information is available directly from the manufacturer we seriously suggest that you tap the source—buy the manual. If you follow their basic tone building recipe, couple it with your instinctive and learned sense of tone, and finally synthesize it with other compatible voicing techniques you have learned, you cannot stray far from your goal. You may even hit it right on.

When hardening hammers for power there comes a point of diminishing returns. The tone may get louder and louder with each successive treatment of lacquer; after a while, though, the tone becomes excessively noisy, thin, and too bright. At this point or just short of it, the hardening treatments must stop.

The Magic Circle of Fifths

Michael Kimbell, RPT
Contributing Editor
San Francisco Chapter

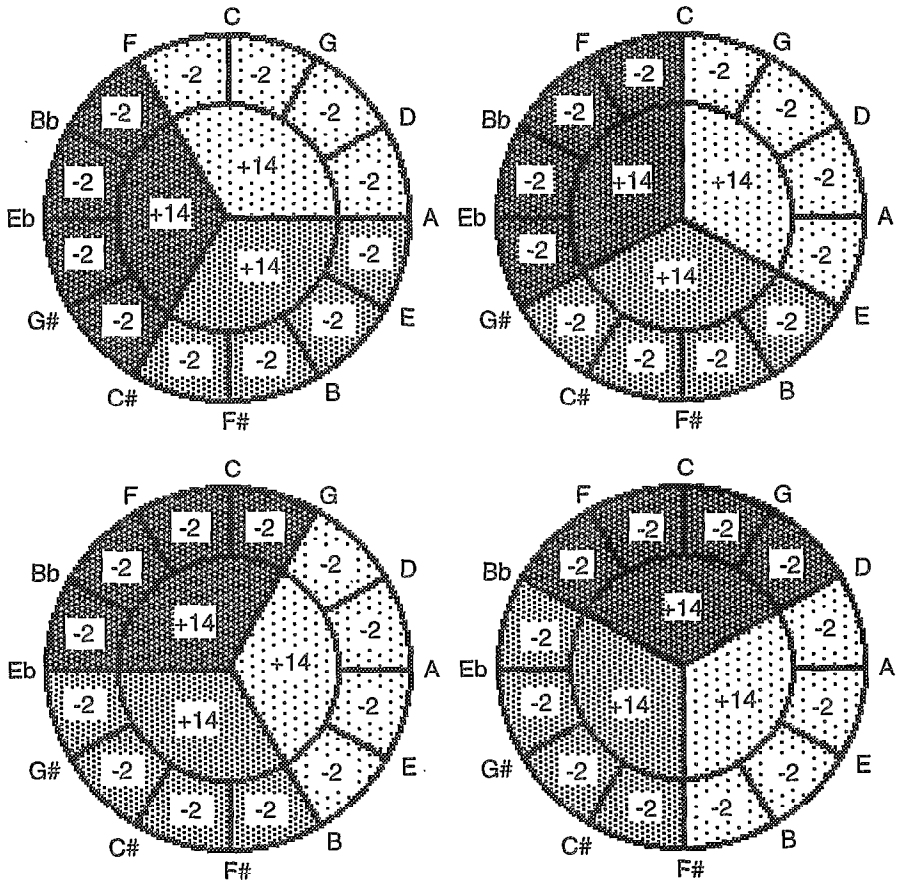
Setting an equal temperament is like slicing a pie into twelve pieces of exactly equal weight and size for twelve gourmands, each of whom insists on his or her equal share. This is not an easy task, yet for the tuner there are several ways of estimating, comparing, and zeroing in on the slices that will please our clients.

This month we shall re-examine the interactions between fifths, thirds and sixths in the temperament, by arranging the intervals in pie diagrams constructed with concentric circles. Several historical tunings will be illustrated, less for their own sake but rather for what they have to show us regarding the structure of equal temperament, as well as some of the mistakes to avoid. Additional diagrams will illustrate other aspects of tuning and de-bugging the temperament.

As I have pointed out in my previous articles on intervals in the *Journal*, there are twelve of each kind of interval: twelve perfect fifths (one for each of the twelve notes of the keyboard), twelve major thirds, twelve minor thirds, and so forth. Based on inversion within the octave, fourths can be regarded as equivalents or aliases of fifths, and major sixths can be regarded as equivalents or aliases of minor thirds. We can therefore consolidate the intervals of the temperament into four groups: octaves, fifths, thirds, and sixths. For the most part, whenever we talk about "fifths" we are really talking about "fourths and fifths." Since tuners work most of the time with only the "perfect" or "major" intervals, we can here omit the words "perfect" and "major" from our discussions. "Fifth" invariably means "perfect fifth," and "third" by itself means "major third."

The octave is like an analog clock: note names (ABCDEFG) and scales recycle every octave, as do series of contiguous major thirds and contiguous minor thirds; even the venerable fourths-and-fifths temperament returns (or so the tuner hopes!) to its point of origin. In our pie diagrams therefore, the octave will be represented by the entire circle, with the twelve fifths of the fourths-and-fifths temperament forming the twelve slices of the outer ring of the pie. Even if you no longer or have never tuned by the fourths-and-fifths method, it still pays to know the "circle of fifths" backwards and forwards by heart, since so much useful information derives from it.

The inner ring of the pie can be sliced into three pieces representing three contiguous major thirds, or alternately into four pieces representing four contiguous minor thirds (alias major sixths). In this way the circle of fifths gives us a method of figuring out and remembering thirds and sixths which is intimately connected with the structure of the temperament: *four* steps in the fourths-and-fifths series equals a major third; *three* steps in the fourths-and-fifths series equals a major sixth or minor third. As shown in Examples 1 and 2, there are four sets of contiguous major thirds (for a total of twelve thirds), and three



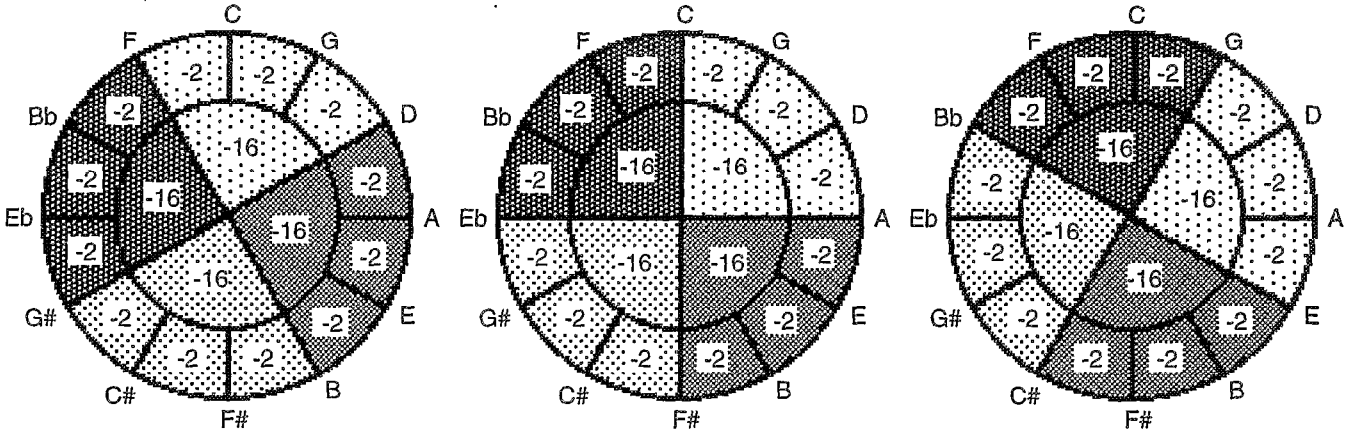
Example 1 — Major thirds and perfect fifths in equal temperament

sets of contiguous minor thirds (again for a total of twelve). When we discuss the other examples, I shall leave it up to the reader to imagine all of the alternate sets of thirds in the inner circle.

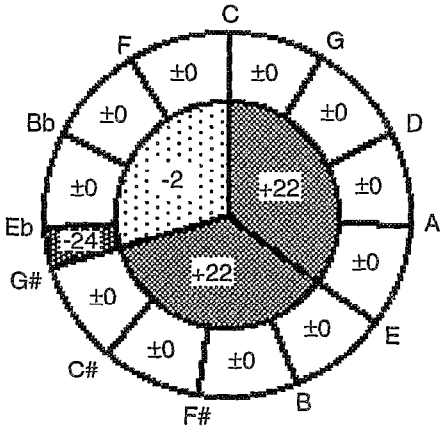
As we saw last month, however, the circle of fifths is an artificial construction: if all of the fifths were beatless, the "circle" would in fact be an endless spiral. If we limit ourselves to twelve notes, eleven fifths can be tuned beatless, but the last fifth is short by almost 24 cents, as in the medieval Pythagorean tuning shown in Example 3. This 24-cent error, known as the "ditonic comma," is an acoustic fact which has to taken into account in any system of keyboard tuning. In Pythagorean tuning, a single fifth bears the entire brunt of the 24-cent ditonic comma. If, however, the 24 cents are distributed equally among all twelve fifths, as in the equal temperaments shown in Examples 1 and 2, then each fifth is narrowed by only 2 cents. In the diagrams, "±0" (zero) means "beatless" and the other numbers indicate deviations in cents from beatless; negative numbers indicate intervals narrowed from beatless and positive numbers indicate intervals widened from beatless. Deviations from beatless are for the most part rounded to the nearest cent.

The inner circle of thirds is also artificial, as can be deduced from the sixteenth-century meantone temperament illustrated in Example 4. Within a set of contiguous thirds, two are tuned beatless, leaving a "wolf" third which is 41 cents wider than beatless. If you imagine for yourself the alternate sets of contiguous thirds (as in Example 1), you will see that there are a total of four wolf thirds which are spanned by the wolf fifth; the other eight thirds are beatless. Like Pythagorean tuning, meantone temperament is also an endless spiral, except that the fifths undershoot rather than overshoot the starting point.

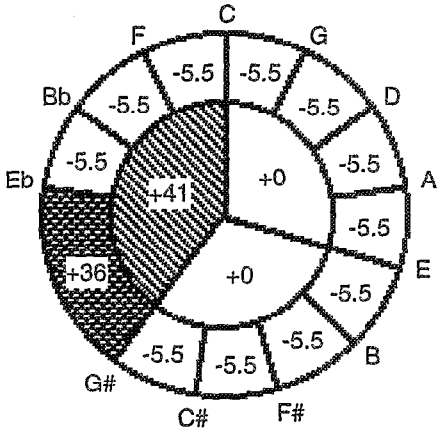
In equal temperament, the 41-cent "diesis" would be divided equally among three thirds, each almost 14 cents wider than beatless. Another way of arriving at +14 is to consider the four fifths which span the third: if the fifths were all beatless (zero), the third would be 22 cents (the "syntonic comma") wider than



Example 2 — Minor thirds and perfect fifths in equal temperament



Example 3 — Pythagorean tuning (beatless fifths)

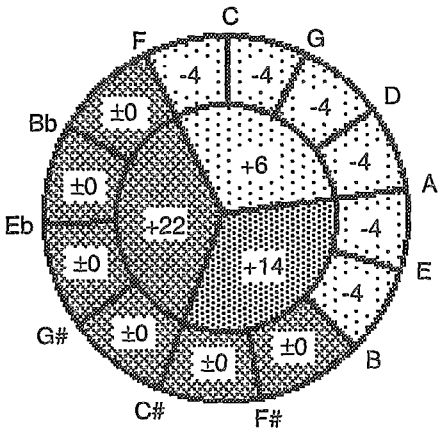


Example 4 — Meantone temperament (beatless thirds)

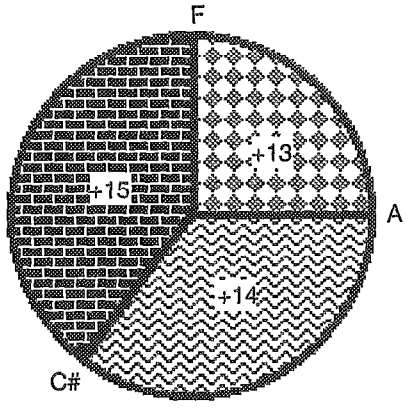
beatless, as seen in Example 3; therefore we start with the number 22 and add the values of the fifths (which are usually negative since the fifth is usually narrowed). In equal temperament, 22 - 2 - 2 - 2 - 2 = 14. Fifths and thirds interact with each other such that wider thirds are associated with wider fifths, and narrower thirds are associated with narrower fifths.

Examples 3 and 4 can also be understood as illustrations of what can go wrong if one attempts to tune an equal temperament by the fourths-and-fifths method without checking the thirds. If the beat speeds of the fourths and fifths are underestimated, as in Example 3, the final fourth or fifth will beat far too rapidly. Example 4 would illustrate the opposite: if the fourths and fifths beat too rapidly, the final fourth or fifth will be inside-out. Even a casual check of the thirds would alert the tuner to conditions such as these. A very slowly beating third would indicate at least one fourth or fifth which is beating much too rapidly (as in Example 4); a very rapidly beating third would indicate at least one fourth or fifth which is nearly beatless or perhaps slightly inside-out (as in Example 3); and a *wildly* beating third would indicate at least one fourth or fifth which is decidedly inside-out (as in Example 4)! In every case the student of tuning should know enough to listen for the mistakes among the outer pie pieces (fourths and fifths) which correspond to the defective inner piece (third) in question. (Of course the entire temperament would have to be re-done if a result closer to equal temperament is desired.)

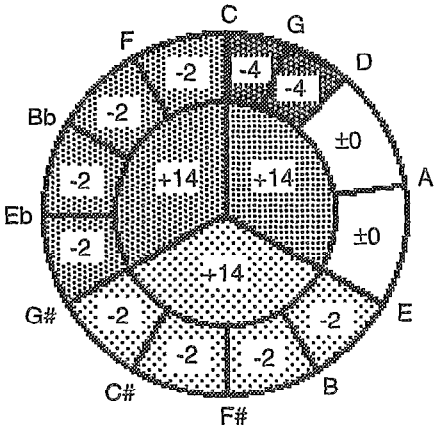
Vallotti's well temperament, illustrated in Example 5, represents a middle-of-the-road eighteenth-century tuning which can be acceptable today in certain circumstances. Half of the fourths and fifths are beatless, the other half beat at double the "normal" rate. (This is actually quite acceptable in many pianos.) The thirds range from +6 to +22 cents from beatless, and it is the "Pythagorean thirds" at +22 which may be objectionable. If we lessen the difference between the



Example 5 — Vallotti's well temperament



Example 6 — Baldassin-Sanderson method, stage 1

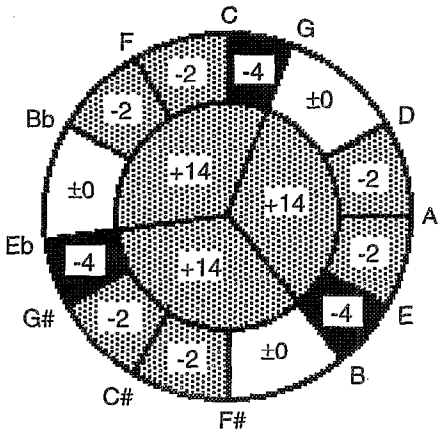


Example 7 — A few bad fifths

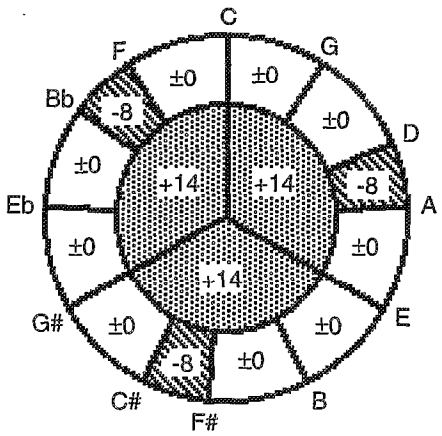
fifths, however — let us say -1 instead of zero for the "black note" fifths and -3 instead of -4 for the "white note" fifths — the deviation of thirds from the "normal" +14 becomes much less: +10 for the slowest "white note" thirds and +18 for those thirds which tend to be used less often (or are used for special effect in classical music). This is the sort of temperament which a piano should receive if it is not going to be tuned in something very close to the ideal equal temperament. For instance, a reasonable approximation of Vallotti's temperament would be suitable in cases of time constraint or if the condition of the instrument is poor. I hasten to add the *best* reasons for using a carefully-set well temperament: the special wishes and tastes of the player and the stylistic range of music to be played, particularly if an antique instrument or reproduction is to be used.

If our aim is to produce a true equal temperament, however, the best way to proceed is to tune thirds from the outset, either in combination with fourths and sixths, or as a set of contiguous thirds which establishes the foundation for the entire temperament. At first glance it would seem that dividing the circle into three equal slices is no easy thing to do (although even on a trial-and-error basis it is much better than trying to divide the circle into twelve equal slices with no other points of reference). On paper it is relatively easy to divide something into halves, but in the circle of fifths the halves would translate into two tritones — quite useless for setting a temperament!

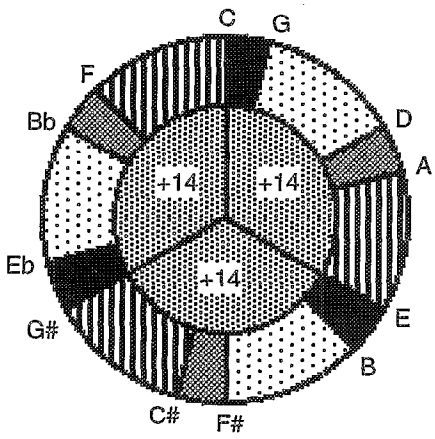
Nevertheless, Rick Baldassin and Dr. Albert Sanderson have found a way of applying the mind's ability to find a reasonably accurate midpoint to the problem of dividing the circle into three parts. For step-by-step instructions I refer you to their article in the *Journal*; here I shall merely summarize their approach and illustrate it with pie diagrams. In essence the tuner establishes a third's beat speed *midway* between the beat speeds of the other two contiguous major thirds of the circle. After tuning A4, A3 and A2, F3-



Example 8 — One set of thirds displaced



Example 9 — Marpurg's Temperament I



Example 10 — De-tuned piano

A3 is tentatively set at 7 beats per second; in Example 6 I have illustrated a situation in which the tuner has underestimated F3-A3, setting it a bit on the slow side. After tuning the F3-F4 octave, C#4 is set in its proper place by making sure that the beat rate of A3-C#4 is midway between the beat rates of F3-A3 and Db4-F4. In terms of cents, it makes no difference whether the three thirds end up being 13-14-15, 14-14-14, or 15-14-13 cents wide: the middle third will always end up at +14. After tuning the C#3-C#4 octave, F3 and F4 can be retuned if needed in order to make the other two thirds of equal size (by setting the beat rate of F3-A3 midway between the beat rates of Db3-F3 and A3-C#4). A word of caution: all of the octaves should be set very carefully at the desired stretch — in other words, the integrity of the circle must be maintained.

Once the circle has been divided into three equal parts, it remains to subdivide the segments, essentially by tuning outwards by fourths and fifths from the anchor notes A, F and C# and by checking the newly-tuned thirds. A useful set of contiguous fourths in this regard is C#3-F#3-B3-E4-A4, although it takes a bit of trial and error to even them out. The dangers of uneven fourths and fifths are illustrated in the next few examples. In Example 7, the thirds C-E-G#/Ab-C are set correctly, but uneven fifths between C and E would cause the other thirds to be eneven. If the unevenness of fifths is mirrored in the other two thirds of the circle, as in Examples 8, 9 and 10, all of the major thirds will sound perfectly good! In Example 8, although G, B and D# are all 2 cents too low, the circle can always be divided into three equal parts. Friedrich Marpurg, the eighteenth-century champion of equal temperament, illustrated his 1776 book on temperament with a series of theoretical tunings (letters "A" through "K") in which the tempered fifths become progressively fewer and worse. Letter "I", illustrated here in Example 9, is far down the list — a *bad* tuning according to his book! — but because the bad fifths are arranged symmetrically around the circle, all of the thirds are equally tempered. An even more extreme example, included here in Example 10 for fun, is the "detuning" of the piano for the PTG tuning examination: all of the major thirds are perfectly good on paper, and are indeed fairly good in fact.

> *"The octave is like an analog clock: note names (ABCDEFG) and scales recycle every octave, as do series of contiguous major thirds and contiguous minor thirds; even the venerable fourths-and-fifths temperament returns (or so the tuner hopes!) to its point of origin."*

It was Marpurg himself who first (as far as I know) suggested the idea of dividing the circle into three equally tempered major thirds as the first step in tuning an equal temperament. His next step is good in theory but very difficult in practice: divide the circle into four equally-tempered minor thirds. Nevertheless, a quick check of major sixths (alias minor thirds) would uncover the mistakes in temperaments such as those in Examples 8 and 9. If the circle is divided into three equal parts in all directions *and* in four equal parts in all directions, then it is guaranteed to be divided into twelve equal parts. If all twelve of the thirds *and* all twelve of the sixths are good, the fourths and fifths are guaranteed to be perfectly acceptable, even on the lowliest of pianos.

There is, however, one trouble with the usual tests of chromatic (progressing) thirds and sixths: they are good at revealing the presence of

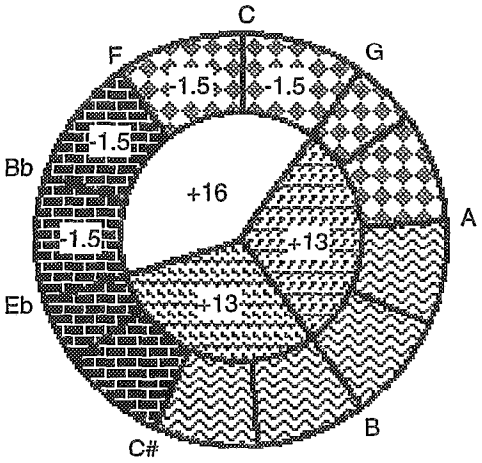
errors, but they do not directly point the way towards making corrections or setting the intervals correctly in the first place. In terms of our magic circle, a test of progressing intervals involves jumping from one position on the circle to another with no obvious relationship between the positions.

Dr. Sanderson and Rick Baldassin have found a way of subdividing the circle into six equal parts in which the "mistakes" (as long as they are repeated faithfully) will still point the way accurately towards B, the midpoint between A and C# on the circle. The trick is to tune outwards from F by two fourths in each direction on the circle (i.e. down two fourths from F4 and up two fourths from F3 on the keyboard), making sure that the fourths all have exactly the same beat speed. It helps to use the third-sixth test in conjuction with the sixth-third test (described below) on all of the fourths. In Example 11 I have assumed that the tuner has forgotten to test the fourths and has underestimated the beat speeds, making all of the fourths a bit too narrow. (Since the diagram shows fifths instead of fourths, the fifths are too wide in the diagram.) G-B and B-D# are then tuned with beat speeds in a 4:5 ratio. In the example, since G is too high and D# is too low, the beat speeds of G-B and B-D# will be slower than the ideal but will still beat in a 4:5 ratio when B is correctly placed. G and D# can then be corrected (if necessary) by setting the beat speed of G-B midway between F-A and A-C#, and similarly the beat speed of B-D# midway between A-C# and Db-F. The rest of the temperament should then fall into place almost automatically.

Any further debugging or refining of the temperament should be done by testing both the upper and the lower note of an interval which seems to be beating too rapidly or too slowly. For each note, play a major third downward and upward, and also a fourth downward and upward. The thirds should beat in a 4:5 ratio; the fourths should both beat about once per second, the upper fourth perhaps beating a tiny bit faster than the lower. Instead of fourths in either direction, one can compare a fourth and a fifth in the same direction, allowing for the fact that the fifth should beat somewhere between half and two-thirds the speed of the fourth. If the beat speeds are not obvious, test each fourth with the third-sixth test, and each fifth with the sixth-tenth test. An additional test for fourths is the sixth-third test: the test note, which should be at least nearly in tune, is a third *above* the upper note of the fourth; balance the results of the third-sixth and sixth-third tests so that the beat speed increase in one test is the same as the beat speed increase in the other.

If only one note is at fault, the third and fourth below it will both beat too slowly *and* the third and fourth above it will both beat too rapidly, indicating that the note is flat; alternately, the third and fourth below it will both beat too rapidly *and* the third and fourth above it will both beat too slowly, indicating that the note is sharp. If neither of these situations holds, then at least one other note will have to be corrected as well, and the tuner should explore chains of thirds and fourths before making a decision on what notes to change. In my experience, if several notes are at fault, they all tend to need to be moved slightly in the same direction (assuming that the temperament is fairly good to begin with). The relationships we have explored here between circles of thirds, fifths and sixths can all be put to practical use. If all of the thirds are good but the sixths (and therefore the fourths and fifths) are not as even as they could be, then a group of contiguous thirds needs to be moved slightly upward or downward, as in Example 8. If the thirds are uneven, then chances are that a group of notes related by fourths and fifths needs to be moved slightly in the same direction, as in Example 7.

In all cases, whenever you tune or retune a note you should know where it falls on the circle of fifths and also to which group of contiguous thirds it belongs, so that you know what effect the tuning or retuning will have on both the fifths and the thirds. If you know your magic circles by heart and use them well, you will never become lost in any temperament.



Example 11 — Baldassin-Sanderson method, stage 2

Loving Imperfect Inharmonic Pianos

by Kent Swafford, RPT
Contributing Editor
Kansas City Chapter

There is a story told in entrepreneurship and introductory business administration classes intended to illustrate one of the secrets to success in the business world. In the story, a manufacturer has built a profitable business building boats. Other manufacturers of boats were less profitable. When asked the secret of his business's profitability, the successful boat-builder immediately replied, "I hate boats!" He explained that too many other boat builders fussed over each boat as a labor of love, built each as if it were for themselves, and even regretted having to sell each boat when it was done. He, on the other hand, built boats for his customers, not himself. He built good, no-nonsense, serviceable boats that clearly were not the fanciest in the marketplace. However, enough of the potential boat buyers thought his boats provided a good value that he sold enough of his boats to provide him and his company with a good deal of profit and success.

I love pianos — mine and other people's — old ones and new ones — big expensive grands and little inexpensive verticals. I even love pianos that aren't really pianos at all — electro-mechancial pianos and synthesized electric pianos, and MIDI sample-playback pianos that come in 1.5" x 9" x 9" boxes. I love playing them, I love listening to other people play them both live and on recordings, I love tuning them (the ones that can be tuned, that is), and I love making them work right.

I'm sure it is unnecessary to hate pianos in order to be a successful piano technician, but it is useful to at least separate piano technology as a fascinating and challenging endeavor in and of itself from piano technology as simply a way of making a living.

I write all this to introduce my point of view. If it is okay for this Journal to have included articles entitled, for example, "The I-Hate-To-Tune-Tuning," then perhaps it is okay for me say up front that I am not the person to talk to about piano technology as a business. It's not that I dislike the business of piano technology; it's just that I happen to like the piano work itself so very much more. I'll let someone else write about how to use these skills to make money.

Enough introduction. Love pianos, and everything that makes them what they are, including inharmonicity. Piano tuners sometimes seem embarassed by the mathematical imprecision that inharmonicity causes in piano tuning, as if it would be good if piano tunings could be mathematically perfect. The imprecision that inharmonicity forces upon us probably does much more good than harm and should cause us no consternation, let alone any embarassment.

> *"I love pianos— mine and other people's— old ones and new ones— big expensive grands and little inexpensive verticals. I even love pianos that aren't really pianos at all..."*

In general, mathematical perfection is not a desirable quality in music. In one of his *Six Talks at Harvard*, Leonard Bernstein spends much time demonstrating the bad music that would result if the form of one of Mozart's symphonies were modified to be perfectly mathematically symmetrical. Bernstein then states, "So the performer must understand what Mozart has done — that he takes our universal instinct of symmetry and plays with it, violates it, ambiguifies it... And therein lies the creativity; that's what makes it art."[1]

During the last few decades, the computer, with all its ability for mathematical precision, has found its way into the making of music. "Computer musicians" have discovered what music teachers around the world surely already knew: that subtle timing variations that move individual notes away from a mathematically precise beat are essential to making pleasing, normal-sounding music.

Mathematically perfect tuning is no more desirable than mathematically perfect form and rhythm. Wendy Carlos, a generally- acknowledged supreme guru of electronic music, points out in *Secrets of Synthesis* that in order to electronically emulate the sound of a vocal chorus or orchestra it is necessary to use a technique called "choral tone" in which multiple oscillators (sound sources) are used and deliberately (de)tuned both above and below the target pitch. In other words, the big, beautiful sounds we associate with choruses and orchestras are inherently out of tune, the result of slight pitch differences between the

individual voices of each section.

(By the way, the technique of tuning multiple sound sources above and below a target pitch should sound somewhat familiar to some piano technicians. A "Honky Tonk" (de)tuning, as a special effect for ragtime and some other kinds of music, can be achieved by tuning one string of each unison in equal temperament in the usual fashion, and the other two strings of each unison deliberately above and below that of the first. Calling this sort of tuning a "choral tone piano tuning" might lend an air of legitimacy to the proceedings that might otherwise not be there; the technique, after all, *is* thoroughly legitimate, even if it is of only limited usefulness.)

Carlos goes on to dramatically demonstrate the effect of "detuned complex partials," the result, as piano tuners know, of inharmonicity. She plays two musical examples, identical except for the tuning of the partials; the one with detuned inharmonic partials is beautiful, the one with "tuned" harmonic partials is electronic mush. She comments, "Isn't it clear that we lose something special if all the partials are forced to be harmonic?"[2]

It may very well be true that bowed-string instruments and wind instruments have near-harmonic partials, but don't make the mistake of believing that with harmonic partials comes mathematically perfect tuning. Bowed-string instruments, woodwinds, and brass instruments are capable of "continuous pitch." Continuous pitch is the ability of instruments to slide, bend or otherwise gradually change from one pitch to another, passing through all the pitches in between. Good string and wind players intuitively and instantly adjust the pitch of their instruments to fit the musical situation. Mathematical perfection just doesn't enter into the picture.

Parenthetically, according to Thomas Rossing of Northern Illinois University, in his class on the physics of pianos at a PTG seminar in St. Louis a few years back, the near-harmonic partials of bowed-string instruments and wind instruments are the result of "non-linear coupling" between bow and string, and between breath and air column, respectively. The natural state of a vibrating string is definitely one of inharmonicity; thus, a double-bass string should exhibit inharmonicity if plucked rather than bowed. Percussion instruments, including the piano, and plucked-string instruments must be expected to exhibit "detuned complex partials." Again, inharmonicity is natural.

It is clear that the unique, beautiful timbre of pianos is a direct result of "detuned complex partials," as Carlos puts it. Attempts to electronically emulate the sound of the piano with synthesizers that can produce only harmonic partials are uniformly dismal. But aside from the beautiful timbre that inharmonicity brings to the piano, there are other benefits as well.

There is an often-mentioned phenomenon of our hearing that tends to make mathematically perfectly tuned notes of the high treble sound flat to us. The existence of this phenomenon seems to be clear; synthesizers tuned to near-perfect mathematical equal temperament do indeed sound flat in the high treble. Orchestral string players who have immediate control over the exact pitch of their instruments have a reputation for playing "sharp," apparently trying to correct the perceived flatness that would occur if they were to play mathematically tuned notes.

So, if bowed-string instruments have near-harmonic partials, how can string players "get away" with playing sharp in the high treble? Why doesn't this sharp playing cause unbearable, wildly-beating octaves? The answer is that notes played on bowed-string instruments tend to have imperfectly sustained pitch; vibrato and the beating that is already present as an inherent part of the aforementioned "choral-tone" sound of a string section would tend to mask the beating in the octaves that we as piano tuners might expect.

Sustained piano notes, incapable of vibrato and other small pitch variations that bowed-string players take for granted, have pitches that are virtually perfectly, unforgivingly sustained. Octaves on the piano that are tuned too wide beat unmercifully. We should be thankful for the inharmonicity of the piano that, in addition to providing a beautiful sound, lets us tune as sharp as we do in the treble. If pianos could be made free of inharmonicity our high-treble troubles would increase, not decrease; the mathematically perfect tuning that would be called for in order to tune beatless octaves without inharmonicity would sound flat in the treble and if we tried to tune sharp (like the string players) the resultant beating would be unbearable.

The success of the piano has not come *despite* inharmonicity but rather to a large degree has come *as a result* of inharmonicity. The special qualities of the piano far out-weigh its limitations. It is simply a fact of life that the piano cannot be tuned to sound musically perfect in every situation. We should be so enthusiastic about our work and so in awe of what the piano *can* do, that no one would even think of pointing out a few things that it cannot do.

1. Bernstein, Leonard. 1976. *The Unanswered Question, Six Talks at Harvard.* Cambridge, MA: Harvard University Press.

2. Carlos, Wendy. 1987. *Secrets of Synthesis.* New York, NY: CBS, Inc.

VOICING

WITHOUT NEEDLES

By Bob Davis, RPT
Modesto Chapter

Have you ever installed a new set of hammers and found the tone uneven? One's first thought might be that since hammers are cut from a single sheet of felt, the tone should naturally be similar from note to note, albeit graduated from bass to treble. The fact that it often is not uniform is a good reminder of how many influences there are on tone besides the hammers, and an excellent opportunity to even up the piano itself before taking the needles to the hammers. The surprise lies not in the unevenness of tone, but in the fact that so many voicing problems can be taken care of so efficiently at this point. An amazing difference can be made in a short time; it is hard to emphasize enough the foundation good preparation can lay for power, evenness, stability and ease of tuning, and clean tone.

Some things like soundboard resonances, will have to be compensated for by small changes within individual hammers. However, good termination of the strings, and perfect mating between them and the hammers, can and should be achieved on any piano before other voicing is done. This not only produces more consistent and stable results, but also saves a lot of time.

Finding them quickly

There are several ways to find improperly mated strings. In vertical pianos, the quick screening test is to strike the key fairly firmly, then, with the key still depressed, to touch the hammer to the still-vibrating strings. This can be done by pushing very gently with the nail of your curved finger on the hammer heel, and the whole piano can be checked very quickly. If all three strings damp immediately and easily, the head is mated to the strings. If the tone goes "zzzt" or if it rings on in one or more strings, a further test can be done by holding the hammer gently against the strings and plucking each one. Some technicians prefer to push forward on the catcher rather than the hammer head, for a weaker contact with the string. You can hold the damper open with the pedal, or preferably, with a finger of the hand that is holding the hammer head. A little later in the article we'll go through the process of what to do with an improper match.

On grands, one test relies on close letoff, but then, if you and your client are discussing voicing, he or she needs a well-regulated piano anyway! The hammer needs to be blocked against the string, as in the vertical. There are two methods: in one, the hammer is lifted to the string with a hook of some kind, like a spring regulating tool or the like, and the strings plucked (with the damper open). While this method works and does not depend on close letoff, it is very difficult to avoid drawing the shank slightly to one side as it is raised, even with good shank bushings. This can give false results, especially if the grooves are significant. Of course, if the grooves are more than very small, this test would probably be a waste of time until after filing, anyway, so if this method reliably gives you the information you need, by all means use it.

In the procedure we prefer, the hammer is touched to the strings by pushing up on the jack tender. The whole piano can be checked quite quickly. Touch the tip of the tender with the middle of the fingerprint of your index finger, and push the tender up firmly into the letoff regulating button. This temporarily causes letoff to be higher than normal, so that rolling onto the tip of your finger will cause the hammer to clock against the strings. Again with the damper open, pluck each string of the unison. The more gentle the blocking, the more refined the test, and we feel that this method gives more sensitive control than lifting the shanks. The open strings are open because they are higher than the others, whether because of imperfect agraffe drilling, irregularities in the capo, or natural curves in the wire from the original stringing. Yes, these curves are still there fifty years later. If you find open strings, make a chalk mark on the key indicating, in your own shorthand, which strings are *blocked*. For instance, starting from a pattern like \|/ |/ , might indicate that the center and right strings are blocking (and therefore low). \/ might indicate the outside strings, and so on. Mark a section or the whole piano, whichever fits your rhythms. If there is any corrosion at all on the strings, it is also possible to mark directly on the (plain) wire, holding the chalk in the same hand that does the plucking. This is faster than reaching down to find the key, but does leave chalk dust to clean off

the soundboard.

Today's puzzler

Almost all pianos exhibit unlevel strings to some degree, but the condition is often particularly prevalent in the low tenor (and sometimes bass) of small pianos, even new ones. It is particularly easy to check this out on verticals, as the front is already off for tuning, and repairing it can improve the sound in what is always a problem area of the scale anyway. Today's puzzler: stop reading for a moment and see if you can explain why small pianos might exhibit this phenomenon.

What's first?

There are four possible causes of improper contact:

1. The strings are not in the same plane.
2. The hammer tops are not level (perpendicular to the sides).
3. Although a top is perpendicular to the sides of a hammer, the shank is not traveling in a plane absolutely perpendicular to the strings.
4. Although the shank is traveling correctly, the hammer head is tipped to one side.

So which should we attack first? The answer is, do those things first which will affect subsequent operations. For instance, if after the strings are matched to hammer tops, a shank is then traveled or a hammer is "burned" left or right so that the tail follows the head through the travel, the hammer top will have to be re-filed. Once the shanks are traveling in a plane perpendicular to strings, and the heads are square to the arc of travel, however, that job is finished. Mating the strings and hammers will not affect travel. Perfect parts alignment will also maximize and even out the power available from the action. This, too, has an effect on tonal judgments made later at the hammer.

This does not mean that a little needling can never be done on an action that is not absolutely perfectly regulated. The needs of the client come first, and sometimes pragmatism takes precedence over theoretical perfection. Sometimes half an hour is better spent evening up the voicing with needles, or taking care of a few really gross clinkers, rather than worrying about the finer points of the regulation.

All that considered, it is still good to think of voicing as one large process involving the whole piano when discussing the long-range view with the client, or when deciding if a single voicing problem could be elsewhere than in the hammer. This will save backtracking, and make the best use of the customer's money in the long run by producing the best results for the time invested. It will also make action overhauls more efficient as well as musically more successful.

The fix

We now have the action bedded and the parts aligned and traveled for maximum power. The regulation is very close, for both power and evenness. If the piano was below pitch, it has been pulled up and the strings have been seated (gently) at the bridge, for a clean termination and stable tuning. This seating is done on both sides of the bridge (in the speaking length and tail), and serves two purposes: it insures firm contact against the bridge and bridge pin, and takes the bend out of that end of the wire. The brass, aluminum, or hardwood tool is placed on the string right next to the bridge pin, tipped at about twice the angle of the pin, and its top tipped slightly away from the bridge. The string will move visibly with a very easy tap from a lightweight hammer-like object. A harder blow will introduce a counter-bend or damage the bridge. If the piano was not too far above pitch, the string seating was done before the pitch was lowered. In our filing, we have done our best to level the tops of the hammers. Now that we've quickly gone through the scale and done our marking, it is time to level the strings.

A common question: "Won't the hammers eventually conform to the unlevel strings?" The answer is that the uneven force will cause the grooves to be different lengths and the texture under each groove different, so that the tone is never quite right. And why not just file the hammer top to match the unlevel strings? Apart from the discontinuous layers this will produce on the hammer tops of both grands and verticals, imagine what happens when the shift pedal is used on a grand. if the right string is low, filing the right side of the hammer to match will not help when the shift is used—it will bring a level area of the hammer in contact with a high string and a low string. However, in answer to today's puzzler, sometimes angled hammers are not traveled absolutely true, in order to get better clearance between them. In this case, the top of the hammer, if perfectly perpendicular to the sides, will not mate with level strings. If a number of consecutive unisons appear unlevel in the same manner, especially if the pattern is open/half-block/block, suspect traveling. In this case, if the traveling cannot be changed because of clearance or spacing problems, the hammer can be filed level but slightly off-axis to cause it to match, or, if the mismatch is not great, the strings can be changed slightly. Neither is ideal from a theoretical standpoint, or course, and is yet another of those myriad tradeoffs in this imperfect but astounding instrument.

In verticals, the strings that the hammer blocks against can be pushed away from the player with brass, aluminum, or hardwood. The important thing here is to rub gently over about a one-inch length ending at the V-bar, rather than introducing a sharp bend in the wire, although with experience it is possible to use a light tap near the V-bar instead of a rub, as long as the tool is not at all sharp. In grands, a string hook will do the same thing. The same gentle rubbing motion is used as on a vertical, only in

an upward direction. If a supply house string hook is hard to get between the strings, modify it, get another type, or make your own. It isn't a particularly critical or high-tech tool. Rub and re-test. if you can find two adjacent notes with unlevel strings, level one note and compare their sounds. There is a characteristic whine that you will soon learn to associate with unlevel strings, and which will allow you to run very quickly through a scale and pick out the unlevel notes by sound alone. Surprisingly, with practice this whine is audible even through an imperfect unison! Rubbing that most wondrous of measuring tools, the fingertip, side-to-side across the unison will confirm amazingly small differences in height among the strings.

Some technicians feel that it is better to take the bend out of the wires before fitting them to the hammers. This is not difficult in verticals and in the capo section of grands—a flat piece of wood spanning several unisons (try the handle of your filing paddle) can be used to rub the strings at the V-bar or capo of a piano that is at pitch. This will remove the curve, and will make the bend between the speaking length and the termination sharper. In most cases it will even up the leveling considerably, and depending on the shape of the capo, may make the tone better and/or the sustain longer. Again, a light tap can be used, in this case on a tool spanning the unison. The rubbing is probably safer at first. Some agraffe sections must be done a string at a time, with the same technique used for leveling because the plate blocks good access. It is interesting to listen to a single-string low bass note before and after pulling the curve out. In most cases it makes a small but noticeable difference. The disadvantage of gang-leveling is that removing the curve makes it a little more difficult to even up the wires if they are still unlevel. However, this is yet another one of those tradeoffs, which we all just have to reconcile for ourselves.

Those blooming hammers

Finally, remember that needling will cause the felt to "bloom." It may no longer fit the now-level strings. After needling usually comes a very light dressing of the hammers with fine paper to remove the little pimples caused by the needling. Any more than the lightest dressing will change the tone and require a small additional amount of very fine shallow needling. Our friend Eric Schandell, of Victoria, B.C., wrote to suggest that at this point the bloom can be made to work for us: it may be pointing out uneven needling, and therefore uneven texture, on the crown of the hammer. Rather than more filing, he uses a single needle(through the strings on grands) to cause the low spot to swell very slightly and mate to the string better. He is careful to differentiate between doing this to a hammer that has been *needled* unlevel and one which has been *filed* unlevel. In the first case, the texture is actually evened up as the mating improves; in the second, the opposite is true.

When done in a systematic manner, the whole process of seating and leveling, along with one additional rough tuning, can be done in a very reasonable time, usually a little over an hour. A new or overhauled piano deserves this treatment, and if it does not get it before delivery, should get it in its first year of service. The strong foundation this work lays will repay the client, and you, for years.

The Tuner

By Paul Monroe

The last article ended with the first three intervals tuned in the F3-F4 temperament and this article will pick up from the M3rd, C#4-A3. If this issue of the journal is the first copy you have received or read, you should obtain a copy of last month's issue to read and study. It is a must as you will have little or no understanding of what follows in this article if you have not taken the time to acquaint yourself with what we are talking about.

The next note to tune is C#4. Tune it to A3 so the beat rate is .5 bps slower than M3rd, A#3-D4 and approximately 5 bps faster than M6th, F3-D4. If you can place the beat rate of the M3rd, A3-C4, in between that of M6th, F3-D4, and M3rd, A#3-D4, you will be achieving a good degree of accuracy.

To hear the M3rd beat rate clearly, hold down A3-C#4 to release the dampers from the strings and strike C#6 in staccato fashion. Listen for the true beat rate created by the differential in the frequencies of the 5/4 coincidental partials. Remember that a M3rd interval is an expanded interval.

Another experience you will have about now is the intervals you have previously tuned will stray a little which means their beat rates have changed from where you had originally set them. This is due in part to your inexperience in handling the tuning hammer. (Hammer technique). This very important subject will be discussed in future articles.

The next note to tune is G#3. I usually start tuning it by using the 4th, G#3-C#4 and tuning it to a slow roll. If you have difficulty in hearing the 4th clearly, hold down G#3 and C#4, releasing the dampers from the strings and strike G#5 in staccato fashion.

After you have satisfied your ears with the 4th, check the m3rd, F3-G#3 to make sure it is beating slightly faster than the M3rd, A#3-D4. you are now at the great moment of decision. If the m3rd-M3rd test is a long way from being correct while the 4th is correct, you may have the original M3rd, F3-A3 beat rate incorrect for that piano. You now say "what do I do now?"

I suggest you set the m3rd, F3-G#3 slightly faster than the M3rd, A#3-D4. Check the 4th, G#3-C#4. If the 4th is tolerable, proceed. If it is not tolerable, start over with your temperament.

When you do go back to reset the temperament, do not change your original beat rates a large amount. Change them a very small amount. You will see what I mean after you try it many times.

The next interval is M3rd, C4-G#3. This beat rate should be slightly faster than M6th, F3-D4, and slightly slower than M3rd, A3-C#4. Also the 5th, F3-C4, should be contracted and have a slight roll.

The coincidental partials in the 5th are 3/2, the third partial of the bottom note and the second partial of the top note. Therefore, to hear the roll in the 5th better, hold down F3-C4 and strike C5.

Another test to check if the 5th is contracted or expanded, (it is supposed to be contracted), is the 6th-10th test.

To check the 5th, F3-C4, in this manner, play M6th, G#2-F3, and M10th, G#2-C4. The beat rate of the M6th should be faster than the M10th if the 5th is contracted as it should be.

You are now at the halfway point of setting the temperament. The rest is downhill. In my experiences, the more accurate the intervals are to this point, the easier it is to tune the rest of the temperament, primarily because you have many more test intervals to help you.

Next, tune M3rd, F#3-A#3, slightly faster than M3rd, F3-A3. The latter should feel slightly faster. If the beat rate is a little faster or even the same, you are proceeding with a good temperament. Conversely, if the m3rd, F#3-A3, is slower than m3rd, F3-G#3, you have a problem and you should start trying to find it.

One place to start is with the 5th, F#3-C#4. It may give you a clue. If the 5th is accurate, try moving A#3 a little. I assure you that as you start to compensate in this manner for the first time, you will wonder what happened. If you do get several intervals over- compensated, don't hesitate to start at the beginning. You will save yourself time and frustration.

Moving on to the next interval, M6th, D#4-F#3, the beat rate of this interval should be slightly faster than the M6th, F3-D4 and M3rd, G#3-C4. It should be slower than M3rd, A3-C#4.

You should note the convenience in using the outside M6th, F#3-D#4 and the inside M3rds, G#3-C4. When you play this M6th interval with your thumb and 5th finger the M3rds lie directly under your three middle fingers which allows your hand to stay in one position as you play all three intervals. With practice you will be able to use this routine in both directions as long as you can distinguish the beats.

I will leave you at this point and continue the temperament in the next issue of the *Journal*. Before closing there is something very important I want to leave with you and that is the value of putting into practice what you have read. Place the Journal on the music rack of your piano and work out what you are reading. Until you actually start doing the things you have read, you will have gained nothing. You can not learn how to set temperament without trying it many times. For some it may take a hundred attempts, others it may take only a few. The secret is to sit at your piano and work at it until you are working out of your sub-conscious mind.

Techno-Stuff

By Richard Anderson, RPT
Feature Writer
Chicago Chapter

This month we have a follow-up question from Pat Ludden about "Pat's Quickie Regulation."

How about some tips on how to keep our newly regulated grand pianos in good condition from tuning to tuning so they will stay in good regulation, to avoid the slow deterioration in regulation that eventually ends up with the need for another complete and expensive job if nothing is done in the meantime. Obviously a person cannot check each and every regulation step on every key on each tuning visit, so how about a general timetable of things to check or watch out for as time goes by?

Unlike regular tuning and hammer filing, which prolong the life of strings and hammers, there's nothing we can do to prevent an action from going out of regulation short of suspending time, gravity and use of the instrument. Actions do, however, go out of regulation in a predictable sequence, and we can anticipate what will need to be done based on the use the piano receives. Tuning frequency is usually proportional to use, so we'll use tunings as our measurement of time/use.

Develop the habit of checking the regulation of a piano as you tune it each time. Watch for notes that play differently in the middle (where the most playing is done) than on the ends. Bobbling hammers and poor checking, which are almost always caused by lack of aftertouch, are a good sign that something needs to be done. If you can develop a feel for proper aftertouch for an action, you'll be able to tell when touch-up of the regulation is necessary before problems like bobbling show up.

Remembering that actions go out of regulation primarily by the compaction of felt over time and with use, we can expect an action to go out of regulation in the following order.

1. Drop of hammerline caused by compaction of wippen cushion and knuckle core, and to a lesser extent, the balance rail punching.

2. Drop of key level caused by compaction of the balance rail punching.

3. Loss of jack/knuckle alignment and appearance of lost motion caused by deformation and compaction of knuckle and jack regulating button felt.

4. Lengthening of letoff due to reduction in hammer size from filing and compaction.

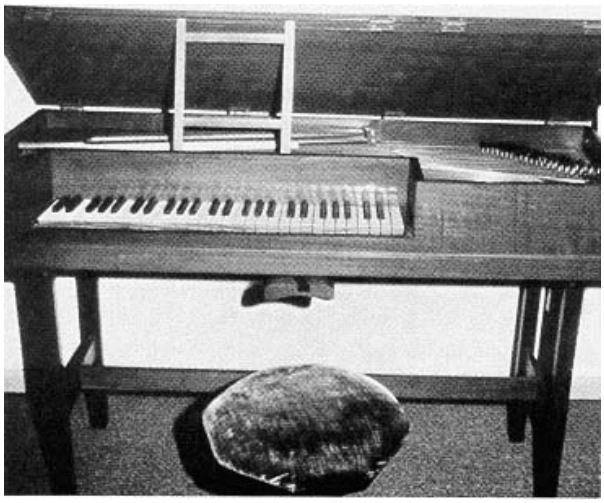
Pat's Regulation Timetable would be:

- **every tuning** check for loss of aftertouch and hammer wear
- **every few tunings** expect to regulate capstans for proper aftertouch and lightly file hammers
- **every several tunings** level keys, file hammers, check jack alignment and lost motion, regulate letoff, regulate capstans

The regulation you will make soonest and most often is cranking up the capstans. As the hammerline and key level drop, the action is required to move the hammer farther with less input at the key and we lose aftertouch. Regulating the capstans to replace this aftertouch will undo most of the ravages of time and restore a great deal of playability to an action.

When we regulate a capstan, we're regulating aftertouch, which is the amount of key travel after escapement. A certain amount of key travel after escapement (letoff) is necessary for an action to finish doing its thing and get ready to play that note again. The proper regulation of a capstan is that which will, at full key dip, allow the jack to completely escape from the knuckle, but not bind against the front of the window in the repetition lever. This usually yields about .060" in dip following letoff in most actions. This regulation is relative to key dip and letoff, so be sure to check or do those adjustments first.

You'll notice I haven't said anything about setting the blow. I don't. Blow is something that I observe after I've regulated the action to work properly. If you start out by setting blow, you'll have to compromise letoff and/or dip to achieve proper aftertouch, and end up going around in circles. Some day I'll do an article on regulating without numbers. Regulation is like tuning in that after setting the one absolute—letoff—(A-440), everything else is relative. The piano will tell you how it wants to be regulated for any given string height and group of action parts.



Bicentennial Piano Display

By Leon Speir, PTGVice President

If we can pause for a moment and reflect on a time when there were no automobiles or other motorized forms of transportation. There were no telephones. Transmitting pictures or voice through the air would have been described as satanic by some. Music or the written word was read at night by kerosene or oil lamp. Journeying across country would require six months to a year. (If you survived the trip) and to travel twenty miles required all day. Life appears to have been quite simple and much slower paced. Knowledge of the world was smaller and friends were chosen because they lived close or they were family members. Automation of factory operations was a luxury not known in those days. Individual skill decided the quality of a product, not how a machine was set up and operated.

It is in this setting that the piano industry began in this country over two hundred years ago. Early in 1775, John Behrent, of Third and Green Streets, Philadelphia, advertised an "extraordinary instrument, by the name of pianoforte, in mahogany in the manner of the harpsichord, with hammers and several changes." Today, in the custody of the Smithsonian Institution in Washington, D.C., you can see an unrestored square pianoforte bearing the inscription of "John Sellers, Philadelphia." although there exists no direct proof, it is believed by historians that this piano was made by the person who was responsible for beginning America's piano industry, John Behrent.

Now if you will grab onto your seat and hang on, we will take a fleeting trip through time. We'll travel from 1775 to a growing Connecticut PTG chapter in 1973. We'll zip past the time of the invention of the telegraph, through the excitement of the first voice communications over wire. Now we will stop only briefly to view the exhilaration of the individuals responsible for the first voice and picture communications over the air. We'll see henry Ford develop the first forms of a factory assembly line for producing the automobile. With lightening speed we will now travel past the industrial age to the space age and deposit ourselves in the Connecticut PTG chapter in the fall of 1973.

A project was being born in the minds of the Connecticut chapter. Because of the upcoming Bicentennial Celebration of 1976 the chapter was searching for an appropriate way to relate our trade to the 200th anniversary of the birth of the United States. It was decided that first they would locate the birth of the piano industry in this country and then they would reproduce the piano that was responsible for it! With this in mind the Connecticut chapter sent two of its members to the Smithsonian Institute in Washington, D.C., to examine the instrument attributed to john Behrent. After carefully examining the instrument and armed with the appropriate measurements, the members returned home to begin the project of building a reproduction of the Behrent piano.

The following brief description of the project is taken from a PTJ article of August 1975 by Chris Robinson;

"We have endeavored to be absolutely authentic in all respects, save two: the piano is scaled so that it can be tuned to A-440, and it will have a slightly heavier bottom than the original (which has warped over three inches out of horizontal square!)"

"...However, iron and brass wire will be used to string the instrument to a tension of 2,150 pounds, and we shall use bone to cover the keyboard naturals. The case will be solid plank mahogany...the 54-note keyboard (C to f, 6 1/4-in octave span) will soon be ready to fit. While we do not expect this piano to sound like a concert grand, we think it will give us a good idea of what American colonials were listening to in 1776, when they heard the "new and different" pianoforte."

Now if we can zip through time once again (I promise this will be our last stop) to Kansas City, Missouri and the annual PTG convention and institute beginning July 6, 1994. If you are planning to attend the convention, you are in for a real treat. The Piano Technicians Guild Foundation (PTGF) has acquired and will be displaying the Bicentennial piano (pictured on the front cover of this Journal) that the Connecticut chapter manufactured! This piano will be displayed by the PTGF in an exhibit at the Home Office during the convention. Transportation will be provided to make the short trip from the convention hotel to the Home Office building. If you are a history buff, you really don't want to miss this exhibit!

To read more about the Connecticut Chapter project, articles appeared in the Piano Technicians Journal of August 1975 on page 19 and of October 1976 on page 17

PTG Review

PIANO TECHNICIANS GUILD

Dedicated To PTG News • Interests & Organizational Activities

Postive Outlook Is *Key* To Success For Inactive or New PTG Chapters

Take heart! It's not impossible because you are not alone...

This is a message to anyone out there who is trying to revitalize an inactive chapter or start a new one. Starting out can be a very frustrating experience. There are always disappointments and setbacks, and it is tough to keep a positive outlook in the face of these. If you are working alone, it can, at times, seem impossible.

But take heart! It's not impossible because you aren't truly alone. There are plenty of people out there who are ready, willing and even anxious to help. These are people who have experienced the ups and downs of working for a cause, and have found that we learn when we teach, and when we bolster anothers' spirit our own is lifted. The best teachers and organizers are the same ones who can be heard to comment on how much they gained from their involvement. These are people you need to stay in touch with if you are going to be successful.

On the flip side of this are the naysayers. There are those who will ask, when you bring up the subject of PTG: "What has the PTG ever done for me? has it improved my business? has it gotten rid of the piano hobbyist down the street who undercuts my prices? And what about the PTG member across town who forgot how to tune a piano ten years ago? Whey would I want to be associated with an organization that represents someone like that?

Let's try the first one. The PTG provides me with an organized list of members that I can go to for advice, referrals, specific information on manufacturers, suppliers, etc. The PTG also provides an organization that can be referenced by these manufacturers and suppliers for communication and other needs. It provides an organized link to the rest of the music industry.

The second question is easy. The PTG improves your business in direct correlation with the investment you make in the PTG. It does this by improving your technical, business and social skills, and just like in school, if you do your homework (chapter meetings, seminars, serving on committees, etc.) you will progress. It should be pointed out though that the primary responsibility for improving a business is always that of the business owner. He or she is the only person who controls the quality, quantity and other aspects of the work that determine the level of success that a business will attain. In other words, while the PTG can make an indirect contribution, your success is up to you.

Third and fourth questions. The semi-professional and others (including PTG members who have let themselves slip) are a temporary problem for someone who is a serious professional. Competition these days

Continues page 49

Reminder Cards Are Essential Ingredient For Repeat Business

Run a more efficient business

Repeat business is essential to successful piano service. Everyone benefits: the technician has a more profitable business, the customer has a better instrument, and the regularly-serviced instrument will be more fun for everyone to listen to. Even if you are already very busy, you can run a more efficient business by maximizing repeat customers.

Consider the alternative. Trolling for new clients is expensive:

- Yellow pages ads can cost $50/month or more. Even if one produces five clients each month, that means it costs $10 per new client.
- It can easily take a quarter hour or more of your precious time explaining your rates and services, taking their address over the phone, and setting the first appointment. And never mind all the extra time it takes to find their home when you discover the directions they gave you are wrong.
- The first service call nearly always takes longer: getting to know the customer, sizing up the piano, fixing the string that breaks...

On the other hand, the cost of a reminder is small: 5 to 10 minutes by phone, or a few minutes to address and stamp a postcard costing under 50 cents.

Continues page 49

PASSAGES

In Memory

Lewis F. Herwig
July 26, 1918
March 3, 1994

Lew Herwig died March 3, after fighting for several year the complications brought on by diabetes. He is survived by his wife Martha, two daughters, one son, six grandchildren and one great grand-daughter.

He was a charter member of PTG and had been with the Phoenix chapter for eleven years. He held many offices in the various chapter where he was a member.

Lew was involved in piano work for over fifty years. Some of his positions follow. From 1959 to 1961 he served as Foreman for Pacific Piano Supply Company in the rebuilding and research department. In 1961 he began a seven year position with Baldwin Piano Company in Los Angeles where he worked as a technical engineer until 1968.

From 1973 to 1982, he took a position with Wurlitzer Piano Company in Holly Springs, Mississippi, again as a technical engineer, and from 1982-1994 he lived in Phoenix and did rebuilding in his home shop plus piano servicing. During this time he was employed by Young Chang America in the research and development department. Among other tasks for Young Chang, he designed one of their new grand pianos that is now in production. In addition, he served as a technical consultant to Yamaha, Kawai, Story and Clark, Baldwin, Steinway and Mapes Piano String Company. He also taught classes for many years at conventions and seminars across the country.

Lew had a great deal of musical talent and played guitar in several jazz groups and did arranging for a Navy band of which he was a member.

There was nothing that Lew liked better than talking "shop" and he always had interesting tales to tell about people and his experiences. Because of his extensive background he had many people seeking his advice and expertise on various aspects of piano work. He took pride in sharing his knowledge with whomever asked for it.

He will be sorely missed by all who knew him.

Wirt Harvey
Phoenix Chapter

Reclassifications to RPT

March, 1994

Region 1

059-Quebec

Gabriel Tremblay
1017, 5 E Rang
L'avenir, QC J0C 1B0
Canada

191-Philadelphia, PA

Howard E. Stickley III
7216 Montour Street
Philadelphia, PA 19111

Region 4

481-Detroit-Windsor, MI

Scott B. Nelson
19493 Inkster Road
Livonia, MI 48152

612-Quad Cities, IL

Lee A. Wolf
903 Main Street
Mediapolis, IA 52637

PTG

IN BRIEF

Early Deadline Cutoff

For anyone who is planning to attend the 37th Annual PTG Convention and Technical Institute, to be held July 6-10 in Kansas City, Missouri, the early registration deadline is fast approaching. In order to qualify for special discounts, registrants should complete the registration form and mail or fax it to the PTG Home Office before June 6, 1994. Those interested in signing up for one or more *PACE* Academy Classes should call 816-753-7747 between the hours of 8:00 a.m. and 4:30 p.m. to find out what classes are still available. Don't wait! Classes are still open but the phones are ringing. Once a class is full, it's full!

Proposal #12 Omitted

The following proposal was inadvertently omitted from the Bylaws report you received with your directory.

Proposal #12: Delegates' Expenses
Source: Executive Board

AMEND Regulations, Article IV, Section C by deleting current paragraphs 4 and 5 and substituting the following:

4. Chapters may bear all or any portion of their delegate's expenses incurred as a result of attending the Council meeting, so long as there is no payment made for the time spent serving as a delegate.

New Chapters Encouraged To Keep Trying...

continued from page 46

is tough, but there again you are responsible for dealing with that. Attention to your own business is what will get you to where you want to go. As for the non-member who questions the integrity of a member, I may sympathize with the idea that members should try to keep up with things, but if he wants the PTG to improve, he should be working with us from the inside. To stand outside the organization and point fingers is fruitless, a waste of time, and usually pretentious.

Finally, I want to say that being associated with the PTG has been a very rewarding experience for me. A few years ago I decided that I was going to have to change some things if I wanted to stay in business. I felt isolated, like I was working in a vacuum, and there were a few naysayers around who were perfectly willing to reinforce those feelings. I had to make connections with others who had a positive view of their world. It didn't take much time to find them. And once I found them, it took even less time to break free of the negativists. Optimism is contagious!

Starting or restarting a chapter is the surest way to provide yourself with the network you need for the sustained support of your business (and your sanity). So if you need help getting started, call someone: your RVP, Chapter Services Rep., an officer of a nearby chapter, or anyone! But don't allow yourself to be discouraged. There is a wealth of talent in our Guild, and most of it is only a phone call away. So get out your PTG directory, paper and pen, and list the questions or problems you may have. Make the call. You won't regret it!

David P. Durben, RPT
Central West Region
Chapter Services Committee

Repeat Customers Need A Consistent Reminder

continued from page 46

If you're like the majority of technicians, many of your customers ask to be notified when their pianos are due for the next tuning. Many who don't ask would be glad to be reminded. A lot of players are not sure how well their piano has held the tuning, and are too busy to initiate a call. They see it as **your** job to keep track of the tuning schedule.

As a provider of piano service, you have a choice: you can assume the active role by reminding customers to keep their piano in good shape, or you can accept the passive role of tuning servant.

Prospecting by phone is one way to encourage repeat business, as Doug Wood wrote in the May 1993 PTJ. Another way is to use reminder cards.

Getting Carded

For years, I've used reminder cards that are custom printed for me. You can do the same, or take advantage of PTG's offering of pre-printed reminder cards.

The Marketing Committee has produced an attractive and effective group of six different cards available with either of two reverse sides. They cost only $12.50 per hundred, or $60.00 per 600. I use about 800 cards in a year. In this quantity they cost less than half a day's work, and keep my schedule full with minimal effort.

Reminder cards work best for your steady customers. During your regular service call, the question of when the next service will be due usually arises. After evaluating the client's individual circumstances—use of piano, budget, environment, and so on—you make a recommendation. A card can be prepared right then for the next service. It's possible to set a specific appointment time, although I'm reluctant to schedule "firm time" appointments for 3, 6 or 12 months in advance. (It makes me feel confined!) Also, a lot of unnecessary rescheduling often occurs as conflicts in a customer's (or my) schedule arise. That's why I prefer to set only the month with the client. I mail the reminder card a week before the first of that month and set the specific appointment upon their acknowledgment by phone.

There are many technicians who do it differently. Dave Stocker, a technician in Olympia, Washington, discusses the next recommended appointment with the customer while he's at the customer's house. His wife Joanne calls two weeks later to make sure the customer is still satisfied and to set a specific appointment date. She sends out a custom-made reminder card two or three weeks in advance of the actual appointment listing the date and time, and then calls the night before to confirm. Lots of office time? Sure, but it works, and it works well.

Getting A Good Response

In my own system, I have the customer address her own reminder card whenever possible. I usually hand it to her while I prepare the bill. A few months down the road when she receives it in the mail, she sees her own handwriting and realizes she chose and ordered this service, not that it is being sold to her. In my informal survey on response rates, these self-addressed cards had the very highest return rate.

The next best response was from cards I addressed by hand. Many of us have computers which can spill out those little self-adhesive labels in a hurry, but my test groups responded only half as often to postcards with computer generated address labels. A few innovative technicians I've talked to address their cards to "Mr. Smith's Mathushek upright." Your personal business style will determine if this novel approach would be effective for you.

I like to mail my cards so that they arrive on Monday or Tuesday. People seem to organize and arrange appointments early in the week (so say my dentist and accountant). If you like

to make appointments well in advance, and the reminder card refers to a specific appointment, mail it to arrive no more than 7 days and no less than 48 hours before the scheduled time. The customer will be less likely to forget, and yet there is time to reschedule if necessary.

In my experience, the effectiveness of cards varies. Of those with pre-set appointments, virtually 100% actually have their pianos serviced, with less than 10% of them calling me to reschedule. Of the clients that are reminded to call for service this month, about 60% do so within a week, and another 20% trickle in over the following couple of months. Those who do not respond get another card when the next service would normally be due. If your business is not at full capacity, you could be more aggressive here.

Rekindling Lost Clients

Reclaiming old business is another way cards can help. Clients' needs change from time to time. Your customer service files can be a source of additional work by rekindling customers that have not had service in some time. Often a friendly reminder will be enough to have them take up regular maintenance again.

Select the most profitable or enjoyable inactive customers for reminders. This can be done several ways:

- location
- type of piano
- age of piano and/or ease of tuning
- potential for other work

You might send these reminders at an anniversary of the last tuning. Mail out a handful periodically rather than hundreds in one batch.

Keeping Track

No matter what method you use, you must have a system for knowing when to send reminders, when each client received one, and the response rates. Computers are very good at this, but a system with file cards that are moved to different boxes with dividers for each month works perfectly well too.

Staying In Touch

You'll be amazed at how much easier your job will become if you start sending reminder cards to your customers. Once you get into the habit, you'll discover that it saves you office time and makes your workday more efficient and predictable. Your customers will come to expect and even look forward to getting their reminder cards.

Reminder cards can end up in the strangest places. Meeting a client in the library a few months back, he said, "Oh, am I glad to see you. Please come tune my piano soon—I got your reminder card last month but forgot to call because I put it under my kitchen table leg to keep it from wobbling!"

Vivian Brooks, RPT
Economic Affairs Committee

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.

May 11 -14
Pianoforte Tuners Association Convention
Bothwell Bridge Hotel
Glasgow Scotland
Contact: Ralph Long
8 Baldock Street
Ware, Herts SG12 9DZ England
Ware (0920) 469485

May 13-14
Springtime in the Rockies
Provo Park Hotel
Provo, Utah
Contact: Vincent Mrykalo
694 N. 100 E.
Provo, Utah 84606
801-375-2987

May 14
New Mexico One Day Seminar
Albuquerque, NM
Contact: Fred Sturm
315 Nara Visa NW
Albuquerque, NM 87107

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

October 6-9
Ohio State Conference
Cleveland, Ohio
Contact: Janet Leary
18817 Hilliard
Ohio 44116
216-331-8126

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

New Members In March

Region 1

021-BOSTON, MA

VICTOR J. BELANGER
196 HAMPSHIRE STREET
CAMBRIDGE, MA 02139

031-NEW HAMPSHIRE

KEITH HOOVER
PO BOX 315
MIRROR LAKE, NH 03853

151-PITTSBURGH, PA

PETER A. STUMPF
3240 CIRCLE DRIVE
PITTSBURGH, PA 15227

191-PHILADELPHIA, PA

JOSEPH C. PERKINSON
2134 LOCUST STREET
PHILADELPHIA, PA 19103

Region 2

231-RICHMOND, VA

PAULA C. DURBIN
P. O. BOX 1677
LOUISA, VA 23093

296-WESTERN CAROLINAS, NC

JOHN E. HENDERSON
55 VILLA ROAD, A1-126
GREENVILLE, SC 29615

301-ATLANTA, GA

VERNON R. NORRIS
180 TREADWICK DRIVE
DUNWOODY, GA 30350

322-NORTHEAST FLORIDA

RALPH M. MARTIN
P. O. BOX 1586
HIGH SPRINGS, FL 32643

331-SOUTH FLORIDA

DEAN PALMER
408 SE 28TH STREET
POMPANO BEACH, FL 33062

372-NASHVILLE, TN

RALPH E. HAMILTON
205 MARMAK DRIVE
GLASGOW, KY 42141

Region 3

752-DALLAS, TX

WALT J. BURCHFIELD
2841 LAUREL OAKS DR.
GARLAND, TX 75044

Region 4

405-BLUEGRASS, KY

DWIGHT L. AUSTIN
2614 UTAH DRIVE
BOWLING GREEN, KY 42104

Region 5

631-ST. LOUIS, MO

DAN W. LINDSEY
923 AMPERE PLACE
LAKE ST. LOUIS, MO 63367

803-BOULDER, CO

PAUL A. HULTGREN
6536 PRAIRIE HILLS DR.
CHEYENNE, WY 82009

Region 6

905-SOUTH BAY, CA

L. DEAN BOESEN
1800 GRISMER AVENUE, #209
BURBANK, CA 91504

931-SANTA BARBARA, CA

JAMES CONNOLLY
323 W. ARRELLAGA
SANTA BARBARA, CA 93101

936-FRESNO, CA

BOB N. GOOLSBY
2933 E. CLINTON AVENUE
FRESNO, CA 93703

953-MODESTO, CA

PAUL S. REA
1002 MOFFET ROAD
MODESTO, CA 95351

Region 7

001-CALGARY, AB

STAN L. KEELING
2220 16TH STREET
COALDALE, AB T1M 1E2
CANADA

011-VANCOUVER, BC

DAN H. FLUKINGER
1744 SHERIDAN DRIVE
KAMLOOPS, BC V2B 6A9
CANADA

594-MONTANA

GUY H. GIBSON
3497 LINCOLN ROAD, E.
HELENA, MT 59601

BRUCE D. PATTERSON
514 DEER DRIVE
GREAT FALLS, MT 59404

974-EUGENE, OR

TY K. KREBS
1455 BAILY HILL RD. #67
EUGENE, OR 97402

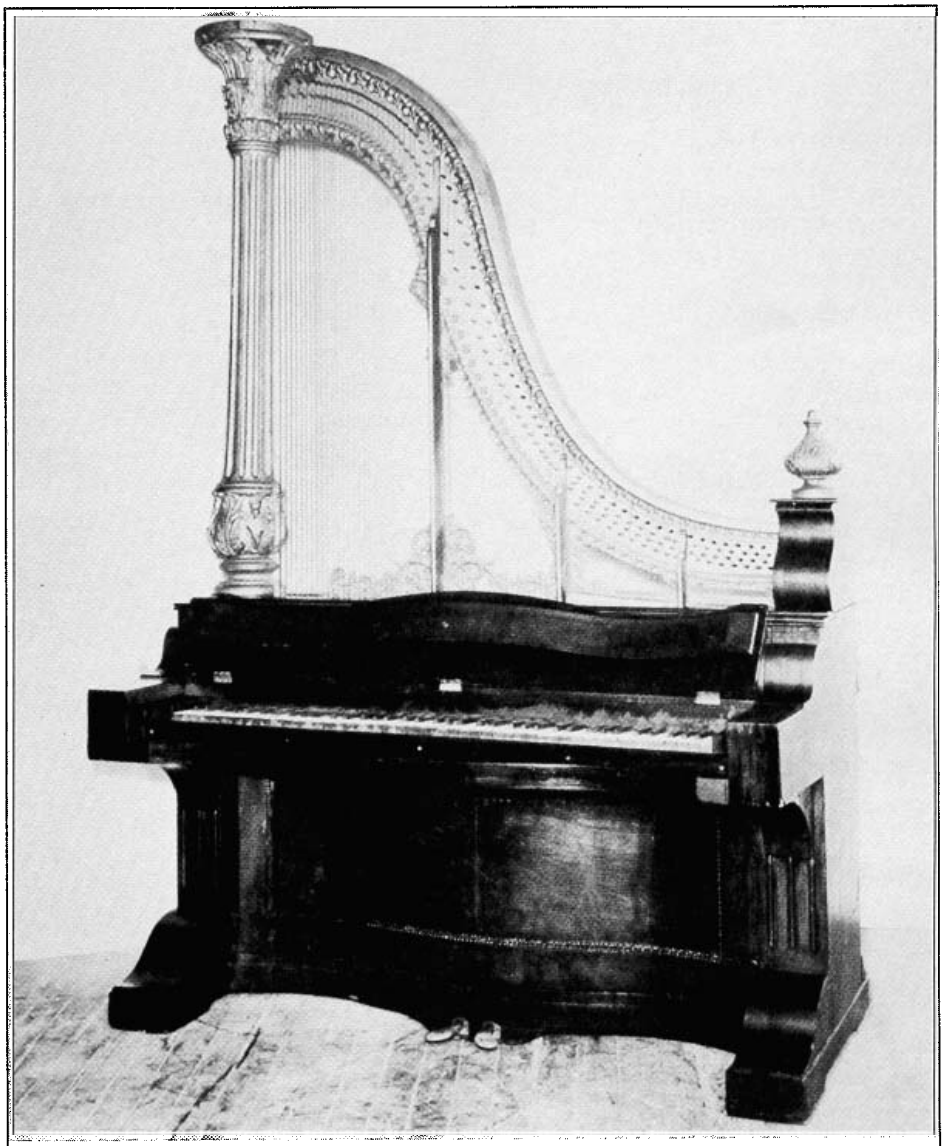
981-SEATTLE, WA

JUAN B. ESCALANTE
11109 4TH AVENUE, W.
EVERETT, WA 98208

JAMES M. HOGAN
519 MALDEN AVENUE, E.
SEATTLE, WA 98112

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."



"Giraffe Piano made by Kroeger; Henry Kroeger Sr., was a native of Germany born 1827; he worked in many factories in Hamburg; Henry Kroeger & Sons was composed of Henry Kroeger, Sr., Otto Kroeger and Henry Kroeger, Jr. Piano now in possession of Kohler & Campbell, New York."—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 you contributions to the Piano Technicians Guild Foundation, 3930 Washington, Kansas City, MO 64111-2963.

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

Tec hnical 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*

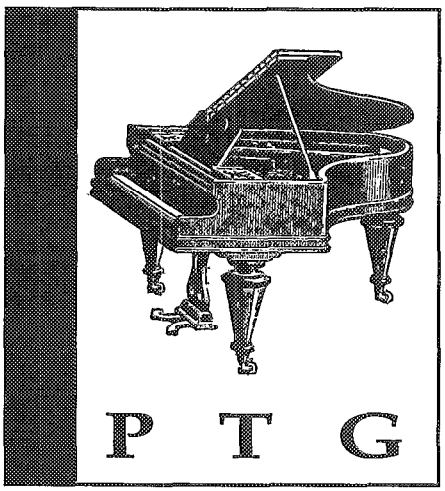
To place your order for any of these items call 816-753-7747

Reminder cards or Business cards also available from PTG

Encore, Encore!

Steve Brady, RPT • Institute Director

Expanding Horizons



Cultivating Artisans

By now, you should have received the official brochure for the 37th Annual Convention and Technical Institute, to be held this July in Kansas City. Just in case you haven't received it, or in case you've misplaced it, we are including a copy with this issue of the Journal. In addition to the brochure, we are including a complete class schedule grid, so you can start building your own curriculum of classes to take at the Institute. I promised last month to talk about some of the popular classes being encored in Kansas City this summer, so I will list just a few of these favorites at the end of this article.

First, I'd like to encourage you to make the trek to Kansas City. I know it isn't always convenient to travel halfway across the country in the middle of summer for the purpose of going to school for a week, but just consider what benefits can accrue from the decision to attend the convention.

The classes themselves are certainly reason enough, since with the excellent lineup of topics and instructors, you will be able to find just the classes you need to fill the gaps of your education and become a more complete and skilled artisan. This can only benefit your business and, therefore, you livelihood. It will only increase your pride in what you do, and bring back the excitement about your work.

Besides the classes, you have the opportunity to rub shoulders with colleagues from all over the continent, even the world. This networking and the resulting friendships provide a support system which, again, can only strengthen your business and provide technical help whenever needed. Many of us feel that some of the best information we get at convention comes from impromptu gab sessions with other technicians.

Third, the trade show (exhibits) gives you an opportunity to see and purchase the exact tools you're looking for, and to learn about the latest developments in both pianos and supplies for piano technicians. This is an indispensable part of the convention experience for most of us.

Finally, who says you can't have some fun while you're at it? Kansas City is a beautiful place with a number of attractions for you and your family. Catch a baseball game, eat some world-famous barbecue, take a lazy riverboat ride, or enjoy some great jazz. Kansas City has all these things and much more! One unique feature found only in Kansas City is the PTG Home Office. This year we are featuring guided tours of the Home Office facility, including the PTG Foundation's new Museum of Piano Technology.

Years ago, a respected colleague of mine made the observation (while trying to persuade me to attend the annual convention in Minneapolis) that "money is only a tool." His point was that we all need to invest in ourselves to fulfill our potential. The money is only a means to that end, and investing in our own education, happiness, and well-being is a wise investment indeed.

Last month's article on new classes didn't include the new classes on business-related topics. Let me just say that Assistant Institute Director Fred Fornwalt has put together perhaps the most complete array of business classes ever seen at a PTG convention. Of the seven classes on business topics, six are brand new. These new classes include sessions on creating a business plan, tax planning and record-keeping, estimates and appraisals, warranty service, and marketing your business. The one business class we are "encoring" this year is Evelyn Smith's very popular and excellent class on customer relations.

In Home Service and Repair Classes

Three of the most informative and inspiring classes ever are returning this year. Isaac Sadigursky presents his three-hour class on *Everyday Piano Service.* If you have never heard this man teach, you owe it to yourself. Once you hear him, you'll never be the same! The Yamaha Team encores its vintage class on *Grand Regulation with Emphasis on Aftertouch.* This class is so important in terms of developing an understanding of aftertouch and its importance in regulation, it should be required for all technicians. Finally, the art of *Preparing the Steinway Vertical* is explained in detail by Steinway's own Scott Jones.

More Institute Update on page 56

Piano Design, Construction and Materials Classes

Bob Beck returns with a class not seen for a few years. He will show and tell *All About Piano Plates,* including plate design and manufacture, finishing and repairs. Del Fandrich's class on his own *Fandrich Piano: The Instrument and The Action,* is expanded to include detailed instructions in regulating and servicing this instrument. Learn the *Secrets to the Superglues* in Ed Dryburgh's popular class on cyanoacrylate adhesives and their uses in piano work.

Rebuilding and Shop Classes

Rick Baldassin and Chris Robinson are back with their great pair of classes on *Retrofitting the Grand Action* and *Installing a New Renner Damper Action.* Joe Garrett will explain the dos and don'ts involved in *Setting Up Shop.* This class has not been seen for a few years, so if you are planning to build a new shop or remodel your existing one, this is a good opportunity for some expert advice. Janet and Kevin Leary will be teaching just one session of their popular class called *Tool Sharpening—Resurrecting a Cutting Edge.* This lecture class is an excellent prelude to their two hands-on tool sharpening classes this year.

Historical Interest Classes

The master, Owen Jorgensen, returns with a new version of his class on *Historical Instruments.* Owen will demonstrate the effects of different temperaments by playing pieces on three different pianos, and will provide tuning instructions for some of the more important historical temperaments.

These are just some of the great classes returning from previous Institutes, and just a fraction of what awaits you at the 37th Annual Convention in Kansas City. See you there!

Getting Around Kansas City

By Larry Goldsmith

Like many midwestern cities, Kansas City is defined by highways and rivers. But Kansas City is also defined by political boundaries. The state line between Kansas and Missouri runs north and south through much of the city.

That division has made for some interesting situations over the years. During prohibition, for example, several establishments that were fortunate enough to be located on the state line would move bartenders, inventory and patrons to the other side of the bar — across the state line — when local law enforcement officers came calling. Things were really interesting during the Civil War, when Kansas was an Abolitionist stronghold and Missouri's sympathies lay with the Confederacy.

Kansas City, Kansas, is across the Kansas and Missouri rivers from downtown Kansas City, Missouri. Even natives of one or the other sometimes become confused when they cross the river: numbered streets run north-and-south on the Kansas side and east-and-west on the Missouri side. And then there are the communities on the Missouri side north of the Missouri River. For example, Kansas City North is different from North Kansas City, and the area known as Northtown is not the same as either. It's also large. The total metropolitan area, which includes more than 136 cities, has roughly the same land area as the state of Connecticut.

Now that you're hopelessly confused, let me reassure you: getting around will be simple. All PTG's convention activities will be in Kansas City, MO. When you step off the airplane, you'll be in Kansas City, MO. If you ride a train or bus into town, you'll be in Kansas City, MO. If you're driving to the Hyatt Regency, you'll find it in Kansas City, MO.

If you're arriving by air, you'll find Kansas City International Airport one of the most user-friendly in the United States. The maximum distance from aircraft to curb is less than 75 feet. The airport is laid out with three circular terminals, and baggage claim areas are only a few feet from your gate. It's not as user-friendly if you have to move from one terminal to another — you have to take a little red bus — but you shouldn't have to.

The airport is located approximately 20 miles northwest of downtown Kansas City, MO, and the Hyatt Regency is on the south fringe of downtown. There are plenty of taxicabs available at the airport — up to five people can share a cab — or you might want to take the KCI shuttle. Ticket counters are available in each terminal, or tickets are sold from golf carts that run around each concourse. The fare is approximately $10 ($19 round-trip), and the shuttle will drop you at the door of the Hyatt.

If you arrive by train, you will already be close to your final destination. You'll be at Union Station (not the big, old, historic-but-nearly-abandoned train station, but the small Amtrak station crouched next to it. It's adjacent to Crown Center where the Hyatt Regency is located, but it's far enough that you probably wouldn't want to walk, especially if you were carrying any luggage. The bus station is also near the downtown area, but it's not within walking distance of the Hyatt.

If you're driving, you'll probably come in on one of two interstate highways, I-35 or I-70. I-70, which runs east-and west, bisects Missouri and Kansas between St. Louis and Denver. I-35 runs northeast-southwest from Wichita, KS, to Des Moines, IA. Both interstate highways go through downtown Kansas City, MO, fairly close to the Hyatt Regency. Interstate 435 makes a complete loop around the city.

Continued page 60

1994 Technical Institute Class Schedule

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

○ 1 class period
⬭ 2 or more class periods

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

	THURS-7				FRI-8				SAT-9				SUN-10		ROOM
BUSINESS CLASSES	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
(90) Ways to Give Better Service Tomorrow/ David Patterson			○											○	Benton A
The Business Plan-Your Road Map to Success/SCORE				○											Chicago B
Customer-Friendly Piano Service/Evelyn Smith									○						Chouteau B
Customer-Friendly Piano Service/Evelyn Smith														○	Northrup
Piano Estimates and Appraisals/Ward Guthrie											○				Empire C
Piano Estimates and Appraisals/Ward Guthrie														○	Van Horn C
Profits and Taxes: What You Need to Know/Ray Chandler	○													○	Chicago B
Talk is Cheap/Keith Bowman													○		Empire A
Techniques of Warranty Service/Jack Wyatt										○					Chouteau B
REBUILDING & SHOP CLASSES															
5-Ply Hardrock Pinblock Design and Installation/Andre Bolduc	○								○						New York B
Complete New Keys with Original or New Frame/Rappaports/H.Narath										○					Chicago A
Dynamic Soundboard Replacement: Theory & Practice/C. Robinson	○											○			Chicago A
Installing A New Renner Damper Action/R. Baldassin, C. Robinson				○					○						Chicago A
Ivory Keyboard Restoration/William Smith			○										○		Chicago B
Not Just Another Hammer Boring Class/Glen Hart		○													Chicago C
Not Just Another Hammer Boring Class/Glen Hart												○			New York A
Restringing the Grand Piano/Greg Hulme						○							○		Empire B
Retrofitting the Grand Action/ R. Baldassin, C. Robinson							○						○		Chicago A
Setting Up Shop/Joe Garrett	○					○									New York A
Tool Sharpening-Resurrecting a Cutting Edge/K&J Leary	○														Chouteau B
TUNING CLASSES															
Accu-Tuner to the Max!/Dean Reyburn						○							○		Empire C
Advanced Aural Tuning with the Whole Sound/Virgil Smith	○							○							Empire C
Advanced Tuning: A Wealth of Intervals/Michael Kimbell				○										○	Empire C
Aural and Electronic Tuning/J. Coleman, Al Sanderson			○											○	Empire B
The Handle on Your Hammer/Bill Ballard			○							○					Empire C
Master Class in Temperament Tuning/Christine Lovgren		○										○			Empire B
Tuning Stability Into Your Client's Piano/Don Mannino							○		○						Empire C
VOICING & CONCERT PREPARATION CLASSES															
Concert Piano Preparation and Troubleshooting/Kent Webb			⬭				⬭		⬭						New York A
Everyday Voicing/B. Davis, D. Erwin							⬭		⬭						Chicago B
Tone Building the Hammer/Wally Brooks											○			○	New York B
Tone Building the Piano/Wally Brooks										○			○		New York B
Voicing the Renner Hammer/Rick Baldassin								○						○	Empire A
PIANO DESIGN, CONSTRUCTION & MATERIALS CLASSES															
All About Piano Plates/Robert Beck								○				○			Empire B
Analyzing the Checking Area in Grand Pianos/Ken Sloane				○					○						Empire B
The Art of Making Grand Dampers/Paul Monachino	○									○					Empire B
The Fandrich Piano: The Instrument and the Action/Del Fandrich			⬭								⬭				Chouteau B
Hammer Weight and Action Leverage/David Stanwood		○						○							Chouteau B
Pins and Strings and Things/Jim Ellis						○	○								Chicago C
The Secrets of the Superglues/Ed Dryburgh		○									○				Van Horn C
Slipping and Sticking Your Way to the Top/Del Fandrich								○					○		Van Horn C
IN-HOME SERVICE & REPAIRS CLASSES															
88 Ways to Better Steinway Service/Scott Jones								○						○	Chicago A
Achieving the Complete Piano Service/K. Cory, D. Swartz				○										○	Van Horn A
Effectiveness-Based Piano Service/Chris Trivelas								○						○	Chicago C
Everyday Piano Service/Isaac Sadigursky			⬭							⬭					Chicago C
Getting the Most Out of a Grand Piano/N. Neblett/N. Gravagne		⬭				⬭									New York B
Grand Damper Service in the Home/Karen Robinson		○										○			Empire C

IN-HOME SERVICE & REPAIRS CLASSES (CONT.)	THURS-7				FRI-8				SAT-9				SUN-10		ROOM
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
Grand Regulation with Emphasis on Aftertouch/Yamaha Team			●	●					●	●					Empire A
The Ins and Outs of Piano Wire/Ray Chandler						●			●						Van Horn C
On the Road Again.../Jim Harvey		●				●									Chicago B
Preparing the Steinway Vertical Piano/Scott Jones			●								●				Chicago A
Regulating The Vertical Action and Keys/Richard Elrod		●				●									Chicago A
Selling Humidity Control (It's Not Just a Rod!) S. Smith/B. Mair	●									●					Van Horn C
Troubleshooting Grands and Verticals/Roger Weisensteiner	●	●									●	●			Empire A
Vertical Dampers/Mary Smith	●													●	Chicago C
MIDI & DIGITAL TECHNOLOGY CLASSES															
Disklavier Master Class/Yamaha Team						●	●								Empire A
PianoDisc Profile/Mark Burgett									●	●					Van Horn B
HISTORICAL INTEREST CLASSES															
Harpsichord Maintenance for the Piano Technician/Michael Reiter				●								●			Van Horn C
Historical Temperaments/Owen Jorgensen													●	●	New York A
The Techniques and Materials of Antique Piano Restoration/E. Swenson			●				●								Van Horn C
SYMPOSIA															
By Eye or By Ear: The Relative Merits of Aural and Electronic Tuning Methods/Al Sanderson, Virgil Smith, Chris Trivelas, LaRoy Edwards											●				New York A
Temperamental Tuners: The Relative Merits of Equal and Historical Temperaments in Modern Tuning Practice/Owen Jorgensen, Michael Kimbell, Virgil Smith, LaRoy Edwards							●								New York A
To Fork or to Float: Perspectives on Pitch Setting and Seasonal Changes/Bill Ballard, Jim Coleman, Chris Trivelas, LaRoy Edwards		●													New York A
INDUSTRY ROUNDTABLE															
Where Do We Go From Here? The State of the Piano Industry/ Brenda Dillon, Lloyd Meyer, Jack Wyatt, Fern Henry					9-10 a.m.										New York A
PACE ACADEMY															
WRITTEN TEST CLASSES															
Preparing for the PTG Written Exam/R. Potter, T. Cobble	●	●							●	●					Northrup
PTG Written Exams/Randy Potter, Tom Cobble						●						●			Northrup
TECHNICAL TEST CLASSES															
Preparing for the PTG Technical Exam/Mike Carraher				●							●				Northrup
TUNING TEST CLASSES															
PACE - Tuning I - Introduction to the PTG Tuning Exam/ Partials and Inharmonicity/Jack Stebbins			●				●								Northrup
PACE - Tuning II - Hearing the Beats/Mark Anderson			●			●									Fremont
PACE - Tuning III - Pitch and Temperament/Kent Swafford						●				●					Benton A
PACE - Tuning IV - Octaves-Extending the Temperament/M. Travis							●							●	Northrup
PACE -Tuning V - Unisons and Stability/Ramon Ramirez										●				●	Fremont
PACE HANDS-ON CLASSES ($10 per session)															
Bushing & Pinning Skills/Bill Spurlock		●					●				●				Benton B
Grand Action Regulation/David Vanderlip, Kathy Smith	●	●					●	●			●	●			Benton A
Hammer Filing and Upright Shank Replacement/ Margie Williams			●				●				●				Benton B
Vertical Piano Regulation/Doug Neal	●	●					●	●			●	●			Fremont
Hands-On String Repairs/Bruce Stevens	●					●				●					Benton B
Simulated Technical Exam-Grand Section/Nancy Oeder				●						●				●	Benton A
Simulated Technical Exam-Repairs Section/Brian Mahaffy				●						●				●	Benton B
Simulated Technical Exam-Vertical Section/John Minor				●						●				●	Fremont
TUNING/TUTORING HANDS-ON CLASSES ($10 per session)															
Octaves Practicum								●		●					ROOM
Temperament Practicum							●			●					ASSIGNMENTS
Unisons & Stability						●								●	WILL BE GIVEN
Simulated Tuning Exam	●	●									●	●			AFTER REGISTERING
HANDS-ON CLASSES CONT.															

PACE HANDS-ON CLASSES (CONT.)	THURS-7				FRI-8				SAT-9				SUN-10		ROOM
ADVANCED HANDS-ON ($20 per session)	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
Applied Bridge Capping-A Practical Approach/J&P Rappaport							●	●					●	●	Van Horn B
Down to the Wire/Doug Wood			●			●							●		Van Horn A
Grand Hammer Technology/Willis Snyder, David Snyder	●	●							●	●					Van Horn A
Hands-On Chisel Sharpening/Kevin & Janet Leary						●					●				Van Horn B
Voicing Techniques That Work/Eric Schandall							●	●			●	●			Van Horn A
College & University Technicians Forum							1-5 p.m.								Conservatory
Classes for the Visually Impaired	●	●	●	●											Van Horn B

Mini-Technicals **Coordinator-Gary Neie** **Chouteau B**	FRIDAY					
	10:30 10:55	11:00 11:25	11:30 12:00	1:30 1:55	2:00 2:25	2:30 3:00
Maple Veneer Repair Techniques/Brian Mott	●					
Get the Lead Out: Fact or Friction/Ron Sharp		●				
Tools for the Commuter Tuner/David Graham			●			
Plugging Bridge Caps/Jonathan Moberg				●		
Quick Spinet Spring Repairs/Leslie Reed					●	
Inharmonic Customers/Sid Stone						●

BUILD YOUR OWN SCHEDULE

	THURS-7				FRI-8				SAT-9				SUN-10		ROOM
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	

Once you're here, you'll want to see more of Kansas City. If you have a car, you'll find getting around relatively easy. Kansas City boasts more freeway miles per capita than any other city with more than a million residents. It also has more boulevards than Paris, and more fountains than any city except Rome. If you want to go to one of the Kansas suburbs, to the Woodlands Racetrack, to the Truman Museum in Independence, MO, or to Royals Stadium, you'll find it an easy trip by Interstate. You can get directions from a member of the Kansas City Chapter, the Home Office staff or a Hyatt bellman.

As in most urban areas, you'll find parking somewhat expensive. The Hyatt Regency has valet parking and a self-parking garage. There are somewhat less expensive lots nearby.

Public transportation is also available. The Metro, Kansas City's public bus system, serves all of the metropolitan area except Johnson County, Kansas. Base fare is 90¢ (exact change), but there is an additional charge every time you cross a line between two zones.

If you're looking for a real treat, take the trolley. Six bright red trolleys run a continuous circuit through the city's main corridor. They're actually busses with open trolley-style bodies, but they serve the River Market, downtown, Crown Center, Westport and Country Club Plaza areas with stops at several hotels. The fare is $4, with unlimited reboarding.

So there you have it. Come on down and enjoy our midwestern hospitality. You'll find Kansas City a friendly place, with plenty to see and do. And you won't have any trouble getting here.

To Find The Hyatt Regency Crown Center

Driving in from the North
I-29 South to the Broadway exit. Take Broadway to Pershing Road & turn East (left). Go to McGee Street and turn North (left). Hyatt will be on the right side of the street.
OR
I-29 South to I-35 South to I-70 West. Take the Broadway exit South. Go to Pershing Road and turn East (left). Go to McGee Street and turn North (left). Hyatt will be on the right side of the street.

Driving in from the South
I-35 North to I-70 East. Take the Broadway exit South. Go to Pershing Road and turn East (left). Go to McGee Street and turn North (left). Hyatt will be on right side of the street.

Driving in from East or West
I-70 to the Broadway exit South. Go to pershing Road and turn East (left). Go to McGee Street and turn North (left). Hyatt will be on the right side of the street.

To Call The Hyatt: 816-421-1234

Accommodations
Travel Discounts
Car Rental

Accommodations

Convention headquarters will be the Hyatt Regency Crown Center. Room rates for the Hyatt will be $75 single or $85 double. When you register for the convention, a reservation form will be mailed to you, or you may call the Hyatt at 816-421-1234. The registration deadline is **June 6, 1994** — after that date, PTG's block of reserved rooms will be released, and accommodations may not be available in the headquarters hotel at the convention rate.

Travel Discounts

American Airlines
USAir

PTG, in conjunction with Maupintour Travel Service, has negotiated special airfares with two prominent airlines for those attending the convention. These special arrangements include:

- 5% off published round-trip promotional airfares
- 10% off round-trip discounted unrestricted full coach fares if the special promotional fares do not coincide with your travel dates.
- Some restrictions apply and seats are limited.

Maupintour Travel Service will research all available options and provide you with the lowest airfare quote from your home city. For additional details, call Maupintour Travel Service at 1-800-382-6700 (Kansas residents call 1-913-749-0711).

Alamo Rent A Car

Alamo has been selected as the official car rental for the Piano Technicians Guild Convention. Special discounted rates have been extended for those attending the convention. Rates range from $26 to $40 a day and include unlimited mileage. Please note, some restrictions may apply. Call Alamo at 1-800-732-3232, and request Group ID #37847 and rate code GR to make your reservations. Also, have the agent check rate code 7G for additional convention discounts that may apply.

Eight Foolproof Ways to Achieve

Public Recognition of PTG and RPT

Bill Spurlock, RPT
Marketing Committee

For years I have heard technicians comment, "None of my customers know what PTG is," or something similar. Indeed, until recently it *has* been hard to create public awareness of our organization. We had no coordinated marketing effort, we blurred our identity by using several different names for our franchised category, our outdated brochures looked as if they were designed during the Eisenhower administration, and we had an undistinguished logo.

Now, for the first time, we have all the tools to build public awareness of PTG and RPT—a professionally designed, visually-effective logo, a single name for the standard we promote (RPT), and a coordinated marketing effort using business aids and public relations to project a consistent message to the public.

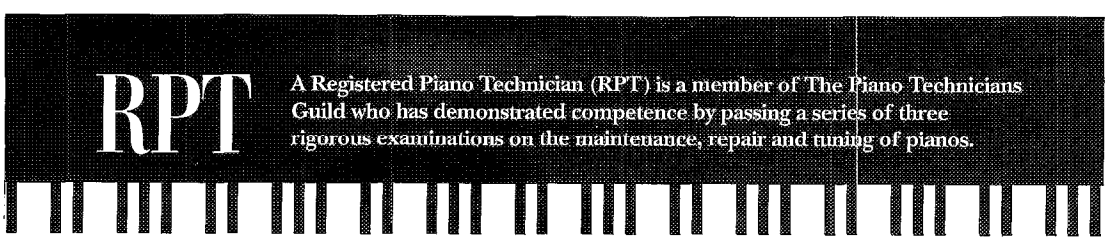
Does it work? Is it really possible to educate clients to ask for an RPT? In my experience it is not only possible, but surprisingly easy. Here are eight simple steps any RPT can take that will get our message across:

1. Use the RPT Bookmark - This combination thank you card and advertisement for RPT is a no-effort way of letting your clients know that you are a member of PTG, and that you've achieved RPT classification by passing a series of exams. Leave a Bookmark on each piano you tune, or use it to mark the client's place before closing and removing music books from their piano. Your signature adds a personal touch, while the "thank you" message conveys your appreciation for their business. Most importantly, the large "RPT" graphic and brief description instantly convey the meaning of RPT even to the casual observer—all without any sermon on your part. Leave them on 15 pianos a week, and you'll be telling 15 people a week what RPT means.

2. Mention RPT in your phone message - This tip comes from Elmo Lundy, RPT of Murphreesboro, TN. It's simple, it's obvious, and we should all be doing it. Your message might go something like, "Thank you for calling Bob's Piano Service, the business of Bob Jones, Registered Piano Technician. Please leave your message . . . " With absolutely no effort on your part, callers will learn that there's a classification called Registered Piano Technician. Your regular clients will be reminded of this when they call and hear your message. Price shoppers who continue dialing around after hearing your message may ask the next technician they reach if s/he is an RPT.

3. Mention Registered Piano Technician during phone inquiries - I'm not one to lecture callers on the merits of hiring a PTG member. However, there are certain times when a quick mention of RPT is easy and appropriate. One is during a phone inquiry from a potential customer. Simply mention during the call that you are a Registered Piano Technician. This short mention of your credentials tells the caller—without you having to say it—that not *all* technicians are RPTs. This works! I get clients calling back after they've dialed around, reconfirming that I am "registered." You can also mention RPT when referring a client to another RPT technician. I always include the line, "so-and-so is a Registered Piano Technician and I can recommend their work."

4. Use the RPT name and logo consistently on your business card, invoices, stationery, and postcards -Now that we have a single name for tested members (Registered Piano Technician), a recognizable and effective logo, and a variety of business aids promoting them, public recognition is much easier to achieve. Consistent and frequent use of the RPT logo on your personal business materials is reinforced by official PTG business aids and media exposure. The cut & paste logo clip art in the PTG Graphics Standards Manual makes it easy to add the logo to your business cards, letterhead, etc. Remember that consistency and

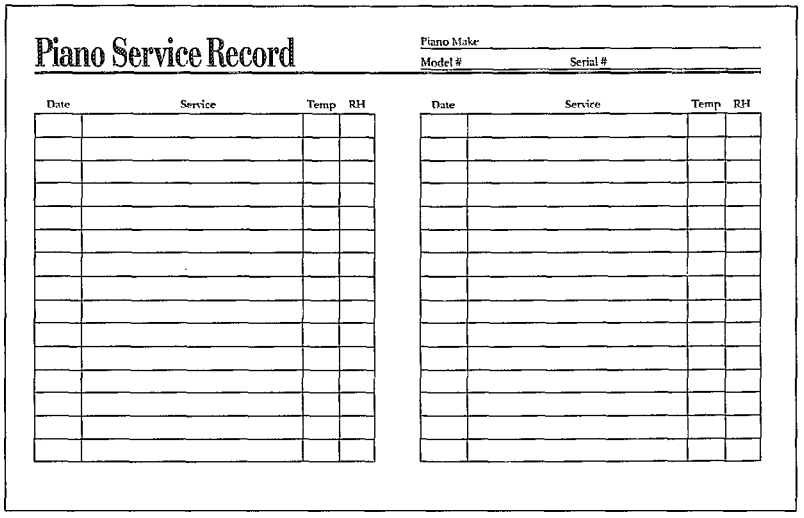


repetition are the keys to recognition.

5. Use the RPT Dealer Service Tag when doing in-store service - This attractive new product is the brainchild of Jack Wyatt of the PTG Trade Relations Committee. Meant to be hung conspicuously on pianos serviced on the showroom floor, the tag combines a short service record, space for the technician's signature, and the message, "The company whose pianos bear this folder has made a commitment to quality by employing a Registered Piano Technician (RPT) member of the Piano Technicians Guild to prepare and service this instrument. Registered Piano Technicians have demonstrated competence by passing a series of three rigorous examinations on the maintenance, repair, and tuning of pianos. " The handsome gold paper and prominent RPT logo associate RPT with quality. Customers browsing the showroom see our logo and learn that there is a standard for piano technicians. Quality is projected upon the dealer as well, who then becomes more aware of PTG's commitment to service.

The Piano Service Record

Front and Back



6. Place countertop displays of PTG brochures in piano stores and teacher studios - Piano owners and shoppers are hungry for information. How often should my piano be tuned? How do I take care of the finish? Where do I find a good piano tuner? Our brochures provide clear, easy-to-read answers to such questions. At the same time, they display our logo and explain that RPT members have passed a series of exams. Displaying these brochures in countertop holders* in stores and studios is an efficient way to reach the piano owning public. This gives the sales staff or teacher an easy way to answer questions, educates the public about proper piano care, and promotes your own business via your attached business label.

7. Contribute to your local music teachers' association - By joining a local teachers' group, you show your support of the music community and learn teachers' needs and concerns. After getting to know them, offer to write a column for their newsletter or present a talk at one of their meetings. Just about any organization that has meetings and a newsletter needs regular contributions—if they are good quality. Articles should be well written and succinct, and should address teachers' needs. Avoid being self serving, but always include the initials RPT after your name. Teachers understand the value of professional organizations, so your affiliation with PTG will lend credibility to your words.

8. Provide extraordinary service - This may seem obvious, but the most important marketing strategy you can use is to consistently provide excellent service to clients. Doing so ensures a good reputation and endless word of mouth referrals. If your RPT credential is *prominently* featured in your business, then your good reputation will promote PTG and RPT as well.

How do you provide extraordinary service? Simply do good work. Show up on time, dress neatly, respect the customer and fix their piano right the first time. In this day when shoddy, unreliable service is often the norm, just doing the *ordinary* makes you look *extra*ordinary in comparison.

*Plastic or wire brochure holders are available from several suppliers. One source is: Siegel Display Products in Minneapolis, Minnesota. Their telephone number is (612)340-1493. Most Yellow Pages contain listings for local suppliers under the heading, "Display Fixtures & Materials." For displaying brochures in stores or piano teachers' studios, look for free standing countertop holders designed for standard 4" brochures. Typical prices range from $2.90 to $4.20 each in small quantities. However, there are substantial discounts for quantity orders, so this would be a good item for chapters to order in bulk.

AUXILIARY EXCHANGE

Dedicated To Auxiliary News and Interests

...Spring...Membership...Convention Classes...

Be a part of the activities and opportunities

Greetings and hello again. I am sure all of you all over the country will agree with me that this past winter has been one of the worst and longest in many a year. All of us in our own regions, be it snow storms, fire, mud slides or what have you can be thankful that Winter 93-94 is in the history books. Enjoy the wonderful, beautiful spring in all of its glory.

As I write this month's column (March 1) our membership has added forty-four new members. Hooray! I believe we can attribute it to the fact that we placed our dues notice in with the tuners statement this year. We will do that again this year as it save money for all of us. Especially since I heard that the US Post Office is going to raise postage again next year. The family can write one check (save checks) for all of the PTG/PTGA affairs and send to KC with one stamp (saves money). However, due to an error, we did not have a line on the statement for the contribution to the scholarship fund. Anyone, at any time, can send a contribution to the scholarship fund to Sue Speir. Perhaps you would like to make it in memory of a loved one.

Wait until you hear the two young ladies who won the Missouri competition. In fact, the high school winner has won her state contest and ready for this—she won the regional and is now preparing for the National competition in Washington, D.C. on March 19. And not only her but her brother won, too. What a talented family that must be. I wrote to her on behalf of the PTGA and wished her all the luck in the world. Even the cherry blossoms should be in bloom then. That a very good omen.

One note about the upcoming convention. As you have heard, we as Auxiliary members will be able to attend some of the PTG classes on Sunday morning. Here are the names of some of the classes which will appeal to us as partners in the business. "Ways to Give Better Service Tomorrow," "Achieving the Complete Piano Service," "Customer-Friendly Piano Service," "Historical Temperaments," "Piano Estimates and appraisals," "Talk is Cheap," and one which should interest all of us, "Profits and Taxes, What You Need To Know." If I have more room in the next issue, I will cover these classes in more detail. Look for them in your program and plan to attend two of them.

I leave you with my thought for the month. "Teamwork is the ability to work together toward a common goal. With that nothing is impossible."

Change Is In The Air

This year, at the 1994 PTG Convention & Technical Institute in Kansas City, MO, Auxiliary Spouses and friends will be able to participate in Institute classes being offered Sunday morning.

What a great opportunity to enhance your contribution to your business. Learn about better service techniques, estimates and appraisals, profits and taxes and a whole lot more.

But you can't be a part of the change if you're not there. Take a few minutes to fill out the registration form which is includedn this mailing and send it to PTG Home Office today.

Early registration deadline is June 6, 1994.

PTG Convention & Technical Institute

July 6-10
Hyatt Regency

CLASSIFIEDS

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

Closing date for placing ads is six weeks prior to the month of publication.

Ads appearing in this publication are not necessarily an endorsement of the services or products listed.

Send check or money order (U.S. funds, please) made payable to Piano Technicians Journal, 3930 Washington, Kansas City, MO 64111-2963.

FOR SALE

HANDCRAFTED SOUNDBOARDS BY NICK GRAVAGNE. Ready to install crowned boards or semi-complete. Your choice. Ordering and installation instructions $15.00. 20 Pine Ridge; Sandia Park, NM 87047 (505) 281-1504

CUSTOM PIANO COVERS MADE TO YOUR SPECIFICATIONS. Perfect for any storage or moving situation. All work guaranteed. Also available, many gift items. Send for free brochures and samples. JM FABRICations; 10516 Ohop Valley Extension Road, Eatonville, WA 98328, 206-832-6009

KORG MT1200 TUNER. $295 (list $375) Hears A0-C8. Plays C2-B5. Shows pitch, note, octave. Can program calibration, temperament. KORG AT12 TUNER. $175 (list $250). SONG OF THE SEA. 47 West Street; Bar Harbor, ME 04609 (207) 288-5653. Brochures

NEW & USED SANDERSON ACCU-TUNERS. Bob Conrad, 1-800-776-4342

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

NEW PERFORMANCE HAMMERS for the musician's piano: Encore Performance Hammers on light walnut moldings; lightly impregnated in low shoulder, a big, full clear clean tone with just a little bite, easily controlled with voicing needles. Available in sizes 4 and 5 and a special model designed for concert grands. Encore Hammers are made to the strictest specifications of Wally Brooks by the Abel Hammer Company of Germany. Write or call Brooks, Ltd., 376 Shore Road, Old Lyme, CT 06371, (203) 434-0287 or (800) 326-2440

WONDERWAND: Try the Tuning Lever you read and hear about. Enjoy Less Stress; Better and Faster Tunings: $60.00 p.p. Charles P. Huether, RPT, 34 Jacklin Court, Clifton, NJ 07012

SANDERSON ACCU-TUNERS from Authorized distributor. Tuning lever note switch for Accu-Tuner: $35/coiled cord, $30/straight cord. Consignment sale of used Accu-Tuners and Sight-O-Tuners or new Accu-Tuner customers. Call for details. Rick Baldassin (801) 292-4441

PIANOS FOR SALE — Spinets, consoles, studios, grands. One or a carload. Excellent brand names. As is or rebuilt. Lowest possible prices. Owen Piano Wholesalers; 2152 W. Washington Boulevard, Los Angeles, CA 90018. Telephones (213) 732-0103, (818) 883-9643

BUCKSKIN for recovering grand knuckles and backchecks, upright butts and catchers. The "original equipment" supplying the industry for 140 years. Richard E. Meyer & Sons, Inc., 11 Factory Street, P.O. Box 307, Montgomery, NY 12549 (914) 457-3834

THE MOST ECONOMICAL precision key bushing cauls on the market. All sizes in stock all the time, custom sizes usually within one week at no extra charge. Phone orders welcome. Immediate shipping. Spurlock Specialty Tools, 3574 Cantelow Rd., Vacaville, CA 95688. Phone/FAX (707) 452-8564

THE SUDNOW METHOD. Your tuning work is over. Now you play "Misty" by ear with great jazz chording. Your client wishes they could do that. Since you learned it in two weeks, without notes, maybe they can too. They buy the Method from you for your price. (Suggested retail is $89) You've paid me $50 each. (Add $5.00 shipping for any quantity). 1-800-658-7250. Paul Cordes, RPT

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

ENCORE PIANO HAMMERS: Consistent, strong round bass; clean, clear tenor and treble without a lot of bite normally associated with European and Oriental pianos. More like the Mason and Hamlins, Chickering and some Steinways made in the early part of this century. Lightweight—easily voiced—no chemical hardener or impregnation—pre-filed—finest quality workmanship. Mahogany and walnut moldings. "T" rivet tensioner-underfelt—15 lb or 17 lb. Encore Hammers are made to the strictest specifications of Wally Brooks by the Abel Hammer Company of Germany. Write or call: Brooks, Ltd., 376 Shore Road, Old Lyme, CT 06371, (203) 434-0287 or 800-326-2440

GRAND PIANO STRING covers. Are you ready for an item that can keep the piano clean, prevent corrosion, improve tuning stability, make your clients happy and make you money besides? Custom made, it rests above the strings, covering soundboard, tuning pins and plate for complete protection inside the piano. Made from finest quality woven wool, available in black, brown and white. Personalized name applique also available. No inventory or investment required. For free brochure and samples call: Edwards Pianos (408) 426-1295, 145 S. River Street, Santa Cruz, CA 95060

PRE-HUNG HAMMERS: We are now equipped to pre-hang Nu-Tone, Encore, or Abel grand hammers to your samples (for almost any grand piano) on new shanks and flanges for a $95.00 pre-hanging fee. An example of the total price for a Steinway M, using Nu-Tone mahogany molding hammers, Tokiwa shanks and flanges, pre-hung with hot animal hide glue, would be $508.00 complete. Highest quality workmanship, fast turn-around time, ready to screw on. Expect minimum travel and burn-in. Large inventory, quality boring and shaping. Fast service. Honest, knowledgeable technical support. Wally Brooks, Brooks Ltd., 376 Shore Road, Old Lyme, CT 06371, 203-434-0287 or 800-326-2440

A. ISAAC HAMMERS - New Steinway style hammer featuring lightweight cherrywood moldings and proper felt density insures minimum voicing, excellent sustain and rich sound. Each set hand picked to meet your specific voicing application. Dale Erwin, RPT, 209-577-8397

USED INSTRUMENT DATABASE. Grandiose Grands: 800-666-7339. Messages: Box 12345. FAX: x60606. Data: x70707. New buyers: x10101. New Sellers: x20202. Online: Coming Soon! Is there a stradivarius effect in pianos? x54321.

PIANO SCALING SOFTWARE for IBM & compatible computers. Plot inharmonicity, tension, break %, loudness/sustain, hammer contact, and more. 18 graph types, automatic bass rescaling, string winding data sheets, detailed users manual and money back guarantee. $80.00. Write or call: Tremaine Parsons, Box 241, Georgetown, CA 95634, 916-333-9299

BOLDUC 5-PLY Pinblocks and Bolduc Soundboards, both ideal for world-class pianos. Pianotek Supply Co., 401 W. Marshall, Ferndale, MI48220, 1-800-347-3854

PIANO TECHNICIANS GUILD marketing tools available through Home Office. 816-753-7747

PIANO TUNING/REPAIR business for sale. Established 13 years—Long Island's affluent North Shore. Excellent repeat customer base. Successful, prosperous. Great opportunity. Motivated seller. 516-928-8123

HAMMER BORING DEVICE. All metal, weighs 15 lbs. Accurate and easy to use. $180.00. Instructions and photo available on request. Kent Gallaway, 709 Thorne, Ripon Wisconsin 54971, 414-748-3265

MICRO-FINE TEFLON POWDER - the best lubricant for grand knuckles. Half the price of the commercially packaged product, and longer lasting. Reduces knuckle friction better than any other lubricant, greatly helps accuracy and speed when making touchweight measurements. Stops all but the most stubborn knuckle squeaks. 3/4 oz. =$3.75, 2.5 oz. = $10.75. For free catalog of all current products call or write Spurlock Specialty Tools, 3574 Cantelow Rd., Vacaville, CA 95688, Phone/Fax 707-452-8564

ACCU-TUNER NOTESWITCHES, from $15.95 plus shipping and handling.Also, grand string covers, custom made from quality wool. Wool absorbs moisture and keeps strings, tuning pins, plates, soundboard looking new. Action Piano, 714-364-1073

ACTION PARTS AND HAMMERS for the rebuilder. Highest quality Encore, (by Abel) and Nu-Tone (Knight) piano hammers. Try the new refined Tokiwa Action Parts (now some of the finest action parts made today). For the classic American piano sound, we recommend Encore hammers on walnut moldings. Encore hammers are made to the strictest specifications of Wally Brooks by the Abel Piano Hammer Company of Germany. Quality boring and shaping. We also specialize in pre-hanging grand hammers on new shanks for a $95.00 pre-hanging fee. Write or call: Brooks, Ltd., 376 Shore Road, Old Lyme, CT 06371, Phone: 800-326-2440 or 203-434-0287. Fax 203-434-8089

PIANOS FOR SALE. Grands, consoles, spinets. Excellent reconditioned brand name pianos. Floor ready-wholesale prices. Also available, "as-is" pianos. Any quantity. Call or write Piano Wholesalers, 5817 Wickfield Drive, Parma Heights, OH 44130. Call us first!! 800-438-3814

STEINWAY & MASON HAMLIN WANTED!! "Dead or alive." $$$ Grands, uprights, consoles—any size, cabinet style or quantity. Cash and immediate removal. Finders fee for successful purchases. Call us first!! 800-438-3814 toll free or write to be listed in our worldwide data banks. Piano Wholesalers, 5817 Wickfield Drive, Parma Heights, OH 44130. Call us first!! 800-438-3814

BEAUTIFUL RARE PIANO. 1849 Jean Henri Pape Grand, 2.10 meter. Made in Paris, ornamented rosewood case, carved legs. Very special prototype with downstriker action, round felt hammers each suspended in spring action to hammer shank. Contact: William Aitchison, 2712 E. Fair Oaks, New Castle, IN 47362, 317-529-5515

SOFTWARE MANAGEMENT SYSTEM. Complete office management designed for the piano technician. Unlimited potential for client database, appointment scheduling, statements, inventory and everything in between. $395/Time payment plan available. Write for a free self-running demo. (Specify disk size). Western Rep: Jim Coleman, Sr., 4 W. Del Rio Dr., Tempe, AZ 85282 or Eastern Rep: Troy Nolen, 5012 Dale Dr., Huntsville, AL 35803

HAMBURG STEINWAY D, twenty years old, new high gloss polyurethane finish, hammers and shanks: three-years-old. Superb condition. $48,000.00 Serious inquiries write: P.O. Box 155, Jamestown, RI 02835

WEBER GRAND PIANO, circa 1927, walnut ex-Duo-Art. $3,500. For details, write to P.O. Box 155, Jamestown, RI 02835

SOUNDBOARD AND PINBLOCK PANELS: Finest quality Bolduc Soundboard Panels made from Canadian white spruce. Pinblock panels of 1/4 sawn Canadian rock maple. For information and price contact Wally Brooks, Brooks, Ltd. 1-800-326-2440, Fax 203-434-8089

1878 SQUARE GRAND piano. Steinway and Sons. Full keyboard, fully reconditioned and refinished. Excellent condition. 403-986-4268. Canada.

ITEM TO SELL? The Piano Technicians Journal is a great outlet for selling products, services, pianos or an piano industry related item. Place an ad today and start getting results. Our ads reach an international audience of piano technicians. Call 816-753-7747

BOLDUC SOUNDBOARDS now available! The best rebuilders know the superior quality of Bolduc Pinblocks. Now you can experience this same superior quality with Bolduc Soundboards. Call for prices and details. Pianotek Supply Co., 1-800-347-3854 or Fax: 810-545-0408

MANUFACTURING

MASON & HAMLIN Companies introduces its re-manufacturing facility. The highest quality craftsmen can now rebuild your old Mason & Hamlin, Steinway or other high quality grand piano to original specifications using old world craftsmanship and the finest quality materials and processes. Please contact: Peter Mohr, Director of Manufacturing, Mason & Hamlin Companies, 35 Duncan Street, Haverhill, MA 01830. Phone 508-372-8300 or fax 508-372-2921.

SERVICES

SIGHT-O-TUNER SERVICE: Repairs, calibration & modifications. Fast, reliable service. Richard J. Weinberger; 18818 Grandview Drive; Sun City West, AZ 85375. (602) 584-4116

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

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

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

ADVERTISING IN THE *Journal* works! Let over 4,000 readers each month know about your product or service. To place an ad, see page 64 of this issue. The next deadline is: May 13 for the July issue.

PIANO HARDWARE REFINISHED. Lacquer finish or nickel plate finish. Craftsmanship and finishes are guaranteed to factory specifications. Delivery 2-4 weeks. Brass on Ivory, 302 Linden Avenue, Edgewater, MD 21037. (410) 798-6536

52 PIANO KEYS RECOVERED—.050 - $85.00; .060 - $90.00; .075 tops with fronts - $85.00. New gloss sharps - $40.00. Keys rebushed: felt - $75.00; leather - $95.00. Other services available. Call or write for price list. Return freight paid with pre-paid orders of $50.00. Walker Piano Service, Route 4, Box 364, Fulton, KY, 42041, 1-800-745-6819

STRAIGHT SIDES, SQUARE FRONTS and crisp notches are the benchmarks of our quality key recovering. Tops with fronts $100 plus return shipping and insurance. Call or write for free list of our key and action restoration services. Yvonne Ashmore, RPT and Associates, 12700 La Barr Meadows Road, Grass Valley, CA 95949, 916-273-8800

KEY BUSHING: We use over 20 different sizes of Spurlock Precision Cauls. Send the micrometer measurement of the key pins and we will give you a perfect fit. Both rails high quality felt $75.00 or leather $80.00 plus return shipping and insurance. Write or call for free price list of our key and action restoration services. Yvonne Ashmore, RPT and Associates, 12700 La Barr Meadows Road, Grass Valley, CA 95949, 916-273-8800

REFINISH PIANO HARDWARE in nickel, brass, or chrome. Metal finishing specialists for over thirty years. Parts shipped back to you in 2-3 weeks Rush jobs can be accommodated. Whitman Company, Inc. 356 South Ave., Whitman, MA 02382. 617-447-2422

SOUNDBOARDS INSTALLED, topsides rebuilt. Bridge-conformed, spherically crowned boards with truly quartersawn ribs. Let's do the job right—you send us the case, we'll return you a piano. Quality's the bottom line. David G. Hughes, RPT. 410-429-5060. Baltimore

SOUNDBOARDS. VICTOR A. BENVENUTO's system of soundboard replacement makes it as easy as 1-2. 100% accuracy. Video tape, $29.95 + S/H. Victor A. Benvenuto, The Piano Shoppe, Inc., 6825 Germantown Avenue, Philadelphia, PA 19119-2113, 215-438-7038, Fax, 215-848-7426

PLAYERS REBUILT! ENTIRE system $1300-$1400 includes tape on reinstallation. Highest quality work and materials used, all work guaranteed. (88 phneumatics sanded, sealed, rehinged, recovered-$200). Bill Maguire, 159 Dix Hills Road, Huntington Station, NY 11746 516-424-6752

TRAINING

THE RANDY POTTER SCHOOL OF PIANO TECHNOLOGY — Home Study programs for beginning students, associate members studying to upgrade to Registered Piano-Technician, and RPT's wanting to continue their education. Tuning, repairing, regulating, voicing, apprentice training, business practices. Top instructors and materials. Call or write for information: RANDY POTTER, RPT; 61592 ORION DRIVE; BEND, OR 97702. (503) 382-5411. See our ad on page 3

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

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

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

PIANO TECHNICIAN APPRENTICESHIP. A comprehensive career training program. Call or write for free brochure and additional information. Matt Grossman, School of Music, University of Louisville, Louisville, KY 40292, 502-852-5544

PIANO TUNING COURSE-6/13 - 7/1/94. Three-week hands-on instruction in Tuning, Regulating and Repairing Verical and Grand Pianos. Instructor—RPT Arthur R. Briggs, (716) 665-5699 and/or contact Continuing Education, Edinboro University of Pennsylvania, Edinboro, PA 16444, (814) 732-2671 or 1-800-526-0121

VIDEOS

PIANO TECHNOLOGY EDUCATIONAL materials. Vertical Piano Regulation by Doug Neal, $115; Plate & Pinblock Installation by Cliff Geers (2 reel set), $148; Wood Repairs by Cliff Geers, $68. Soundboard repair by Cliff Geers, $86; Grand hammer replacement by Cliff Geers, $86. Add $5 per order for shipping and handling. Questions? Call 712-277-2187. Mail orders to PTEM, 3133 Summit, Sioux City, IA 51104

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

WANTED

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

ANTIQUE AND MODERN European grand pianos, any condition. Swenson's Piano Shop, P.O. Box 634, Trumansburg, NY 14886-0634. 607-387-6650. FAX: 607-387-3905. (24 hours)

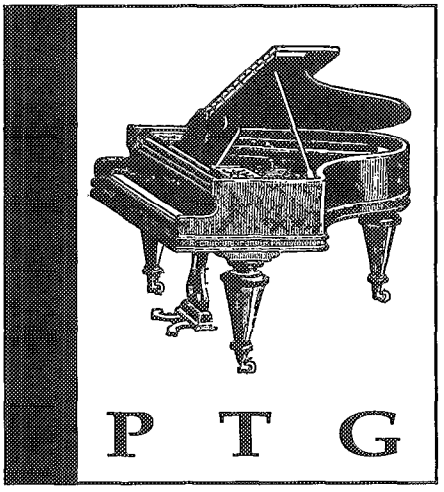
Q-R-S SAX ROLLS. Good or excellent condition only. Call Jami 816-478-6976

SEND RARE AND HISTORICAL pianos to the restoration experts. Handmade parts, open-and close-wound bass strings in brass, iron or copper. Edward Swenson, P.O. Box 634, Trumansburg, NY 14886-0634. 607-387-6650. FAX: 607-387-3905. (24 hours)

LONG-TERM OPPORTUNITY. Seeking either outside tuner/technician or shop technician. In business for 16 years. Owner has second business and needs self-motivated partner. Lavender Music, 112 Park Place, Dublin, GA 21021, 912-272-2727

WHEREABOUTS OR AVAILABILITY of any Leckerling pianos. Contact Bill Leckerling, 802-425-2736, RR1, Box 1657C, Charlotte, VT 05445

Expanding Horizons



Cultivating Artisans

PTG 37th Annual Convention & Technical Institute

July 6-10, 1994

Hyatt Regency Crown Center

Kansas City, Missouri

Display Ad Index

Baldwin Piano & Organ	IFC
CA Geers	16
Dampp-Chaser Electronics	43
Decals Unlimited	3
Dryburgh Adhesives	13
Gavin Piano	13
Inventronics, Inc.	15
Jaymart	13
Kawai	7
Lunsford-Alden	55
Onesti Restorations	17
PianoDisc	IBC
Pianotek	15
Randy Potter School	3
Renner USA	53
Renner USA	55
Renner USA	65
Reyburn Piano Services	3
San Francisco Piano Supply	55
Schaff Piano Supply	1
Schroeders Classics	3
Spurlock Specialty Tools	55
Superior Instruction Tapes	55
Wurlitzer	9
Yamaha	BC
Young Chang	11

PianoDiscussions™

News From The World Of PianoDisc

Continue your PianoDisc education

As we mentioned last month, some of you PianoDisc technicians have been clamoring for a follow-up seminar to sharpen up those PianoDisc skills you learned at the Installation Training seminar. Accordingly, PianoDisc will begin offering a series of Continuing Education seminars for certified PianoDisc technicians. Take a look at the information box below for dates and details.

The Continuing Education seminars are two days long, each beginning on a Monday. All classes are conducted by PianoDisc's senior installation and tech support staff.

In the Continuing Education seminar you'll learn more about the operation and make-up of the PianoDisc system. You'll also learn how to repair or replace components and install updated hardware and chips (as opposed to sending the parts back to PianoDisc for replacement). And you could be called upon to do difficult service calls—on us. All in all, it's well worth the trip!

In order to attend the Continuing Education seminar you need to be a PianoDisc certified technician in good standing. If you aren't a PianoDisc certified technician you'll need to attend the four day Installation Training seminar first. If you're unsure of your eligibility, contact our Tech Support staff and they will assist you. But make your plans soon—we're sure these new seminars will fill up fast!

PianoDisc Installation Training 1994

- April 13-16
- May 11-14
- June 8-11
- August 10-13
- September 21-24
- October 12-15
- November 9-12
- December 7-10

Continuing Education Series 1994

- May 9-10
- June 6-7
- 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
(510) 427-0411

Our telephone lines are open daily (except weekends and holidays) from 8 AM-12 Noon and 1-5 PM Pacific Time.

Save some $$$!!

A hot travel tip for you techs that are booking airline reservations to attend a PianoDisc seminar: **try to include a Saturday overnight stay in your itinerary.** The difference that this can make in your airfare could be as much as a 60-70% reduction in cost! For example, in a recent call to United Airlines we found that a round trip from Chicago to Sacramento booked one month in advance would cost $1300, but that a Saturday night stay would decrease the fare to as little as **$398!!**

So, if you're planning to attend the PianoDisc Installation Training course, try to stay an extra day or two and leave on the following Sunday or Monday. If you're thinking about the Continuing Education seminar, you're in luck - the airlines reserve their rock bottom fares for folks who fly on Saturday, Tuesday and Wednesday. So, just plan to fly in on the Saturday prior to your class, enjoy Sunday in beautiful Sacramento, and fly out the following Wednesday. You'll get a great class, and save a bundle to boot!

Tech Spotlight...

This month our spotlight sweeps north towards the Big Apple, where **Paul Koegler** of **H&K Automated Music** in Bayshore (just outside of New York City) has been busily installing PianoDisc systems for, among others, Steinway Hall in New York and the Frank & Camille's chain of piano retail stores.

Now Paul, like so many other PianoDisc techs, was very busy for the three weeks or so preceding the Christmas holiday. This should come as no surprise to most of you PianoDisc techs, since you were probably pretty busy too. But we doubt that anyone was as busy as poor Paul. You see, during the seventeen days between December 6 and 23, Paul, with the help of one full time and one part time assistant, installed 26 PianoDisc systems. That's right—**26**! 25 grands and one upright, every make from Young Chang and Yamaha to Baldwin and (of course) Steinway. "We did lots of Steinways," reflects Paul.

But that's not all he did. Paul also managed to get in two tunings a day, rebuild a pinblock on a Knabe AND do a full rebuild on an old Walters upright player—all before Christmas. "At one point we had 13 installations in progress at the same time, along with the rebuilds," recounts Paul. "Looking back on it now, I can't believe that we got through it." Neither can we, Paul.

How were the hours? "Insane," says Paul, "Absolutely insane. I basically worked from 5:30 in the morning to between midnight and 1:00 in the morning every single day during that time. My wife can verify that—she almost never saw me that whole time!" Paul said that the folks that assisted him didn't fare much better, either.

Now we at PianoDisc commend Paul on his time management skills and his spectacular accomplishment, but like the warning that they give on those live stunt shows on TV says, **don't try this yourself**. Paul had lots of help, and lots of experience, and in spite of that "I'll never do it again," he vows. Never? Umm-hmm. Just wait 'till next December...

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...

YAMAHA