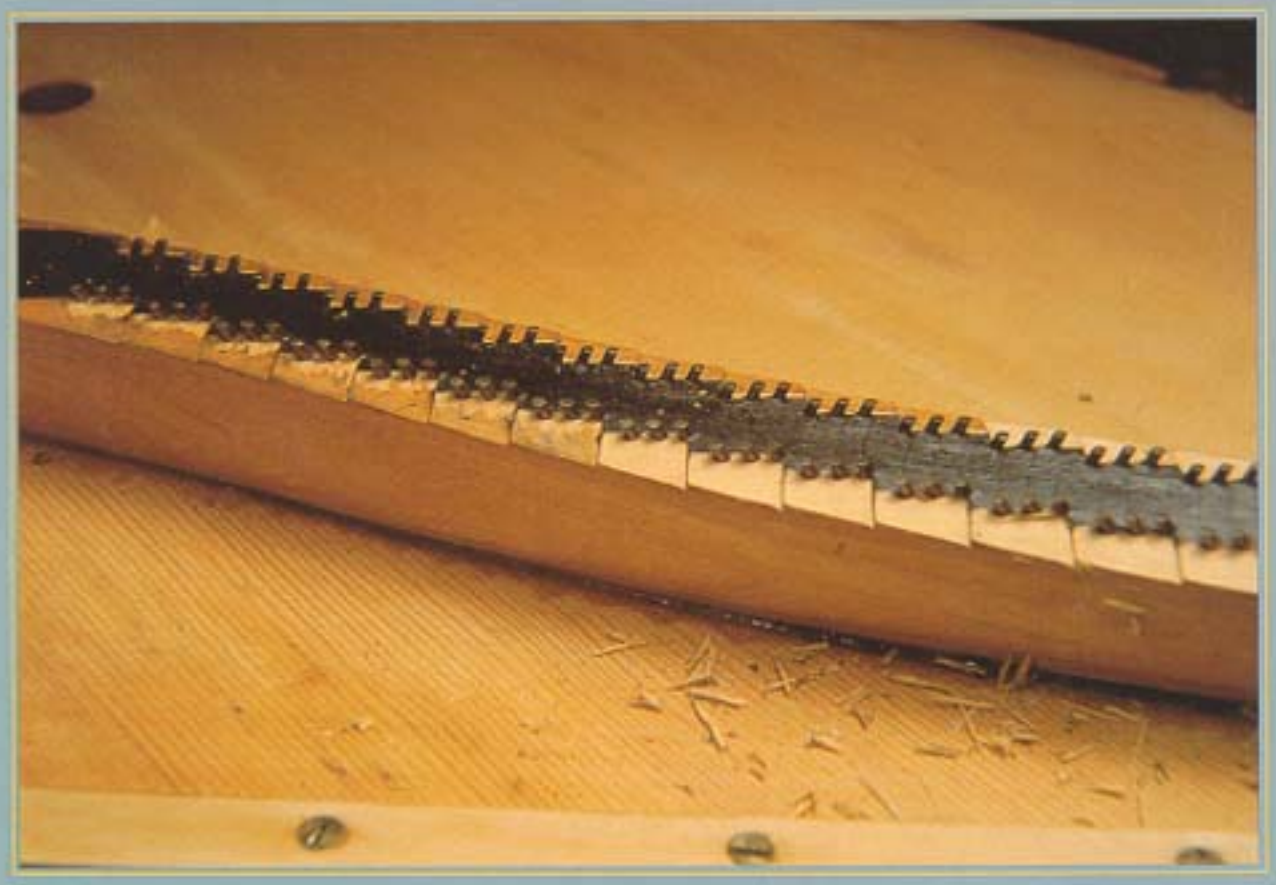
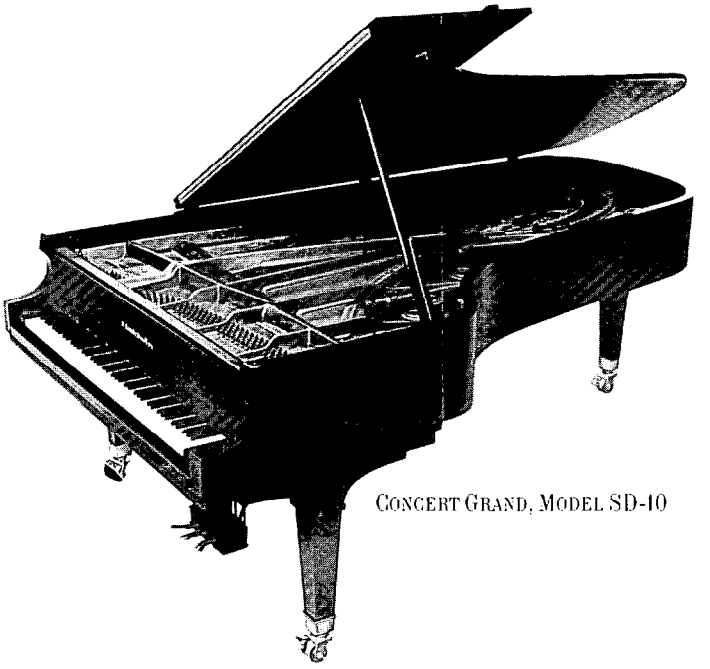
Piano Technicians Journal

May 1990



When you want Baldwin quality



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Stephen S. Jellen

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PIANO TECHNICIANS
Journal

MAY 1990 — VOLUME 33, NUMBER 5 OFFICIAL PUBLICATION OF THE PIANO TECHNICIANS GUILD, INC.

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President's Message

Preparing For The Council Session

Ronald L. Berry, RTT
President

May is the time of year when we need to think about the upcoming Council session. Chapters should have selected their delegates by now. In this issue you will find the Bylaws amendments which will be a major part of the delegates' business at the Council session. It is imperative that your delegate knows your feelings about these issues. The actions that Council takes affect PTG for many years into the future, and they must not be taken lightly. Chapters should spend meeting time discussing the issues and instructing the delegates accordingly.

Our Council is a very inefficient way to run our organization but it gives us more democracy than is present in most organizations. The fact that our members truly care what happens to the organization is a very valuable asset. We prefer to have it be inefficient just so everyone can have his say in the operation. It is fascinating to me when a delegate will make references to the "they" that runs the organization, especially when the "they" is the very assembly to which the delegate belonged.

Make sure that your chapter has its delegate and that the delegate has become well-informed about the issues at hand. Resist the temptation to send someone different every year so they can get experience. Send the new people as alternates so they can get used to how Council operates. Council can be intimidating; it takes a delegate a little practice to become effective.

We should all be thinking about where PTG is headed. We tend to wait until a crisis happens and then react (we hear this over and over but it appears that most everything operates this way). By doing a little forward thinking, we can head off problems before they develop. The piano industry has experienced some decline which has not affected technicians too much. Whether this will affect us depends on what we do to head it off. ≡

From The Home Office

Promoting The Piano

Larry Goldsmith
Executive Director

Generally speaking, there are only so many ways to expand your business. You can step up your marketing activities through advertising and self-promotion. You can reach new customers by expanding your market area. Or you can develop new products or services. There's certainly no secret in any of this — the hard part is in the nuts and bolts of actually doing it.

But there's another, even more difficult, way to get new customers. It requires a large investment in time and money — in fact, it's too big a job for any single individual or company to accomplish. It requires constant attention and an open-ended commitment, and it may take a long time to see results. Why bother? Because it's absolutely necessary.

I'm talking about developing new customers, people who do not now own a piano or even play one. All of us who make our living from the piano have an obligation to support it by helping to get more people excited about the instrument we love.

In fact, it goes far beyond the piano alone. Anyone who plays or even enjoys listening to any kind of music is a potential piano owner. And even if they never touch a piano key, they will be more likely to support community music programs and music education in our schools. If a dealer sells a new piano, if a teacher gains a new student, if a technician gets a new client, everyone involved in music benefits indirectly.

More than ever before, the various segments of the piano industry are realizing that none of us can do it alone. By ourselves, we cannot even maintain the status quo. By working together, we can help the piano regain its position as the pre-eminent musical instrument.

This sort of cooperation goes on at all levels. For example, the recent Pennsylvania State Convention involved local dealers and music teachers in an event open to the public. Several regional and state organizations work with teachers' groups to provide performance scholarships and support for their meeting activities. Nationally, representatives of the various organizations in the piano industry meet regularly to discuss ways of cooperating more effectively.

Great things are happening. During our Dallas convention in July, you'll learn more about upcoming promotional activities which will involve all segments of the music industry. Be sure to attend and learn how you can make a difference.

Industry News

National Piano Foundation Awarded Second NAMM Grant

The National Piano Foundation and Piano Manufacturers Association International have received major funding from the National Association of Music Merchants for the second stage of the Piano Popularization Program market development plan.

NPF will develop a number of product distribution/information exchange programs with members of the piano industry, including sponsorship of an educational showcase at the 1990 National Piano Pedagogy Conference in Chicago.

As part of this distribution project, copies of NPF's Possible Dream video will be made available to 50 major television markets throughout the country. "The Possible Dream: Make it Come True" was introduced last year during the first stage of the Piano Popularization Program. NPF plans a new video this year featuring piano and the family.

The Phelps Group of Los Angeles will direct a consumer publicity campaign for NPF, informing the public about the benefits and pleasures of piano playing. In conjunction, NPF will publish a new consumer brochure encouraging family commitment to music-making.

NPF will sponsor another in its successful series of traveling libraries of sheet music. The traveling libraries, complete with accompanying audio cassette and overhead transparancies, are available for rentals to piano teachers' associations and college pedagogy departments.

To assist retailers' sales and consumer education efforts, NPF will develop a Piano Popularization Program promotional kit, containing brochures, pamphlets, videos and public relations information.

For more information on the Piano Popularization Program, contact Madeleine Crouch, National Piano Foundation, 4020 McEwen, Suite 105, Dallas, TX 75244, (214) 233-9107.

In Memory

In Respectful Memory: Erroll Crowl

Erroll "Putt" Crowl, 92, of Athol, MA, died March 19, 1990, in Athol Memorial Hospital.

Crowl was a representative of the American society of Piano Technicians during negotiations which led to the merger of that organization with the National Association of Piano Tuners in 1958, and served with John Travis as the first co-presidents of the newly created Piano Technicians Guild.

In addition to being past co-president of the Piano Technicians Guild, he was past president and active in the Boston Chapter. He was also one of the key figures in forming the Connecticut Chapter. In 1983 the Piano Technicians Guild elected him to its Hall of Fame.

Erroll Crowl
1898 - 1990

In the years following the merger, he collaborated with Stephen Jellen and they built a few pianos under the name of the Crowl and Jellen Piano Co. with the guidance and direction of Charles F. Stein.

He began his musical career, which lasted more than seven decades, by playing for silent movies in North Dana, Athol, and in vaudeville performances at the old York Theatre. He tuned pianos for many performers in area towns and for many years was a tuner for the Pioneer Symphony Orchestra. Crowl played piano for dances with Goodnow's, Bryant's and Perley's Orchestras. He participated in some 4,000 professional appearances.

In an *Athol Daily News* interview a few years ago, Crowl, stating he was "too lazy to retire," recalled the beginnings of his career as a piano tuner in 1918 when he was a member of Clarence Goodnow's Orchestra in Orange, MA. He was an assessor for the town of Orange at one time, and manager and saxophone player of the Orange Community Band, formerly the Minute Tapioca Band. He recalled driving to Boston on Saturdays for lessons.

After receiving a diploma from the Faust School of Tuning and Service (affiliated with the New England Conservatory of Music), Crowl went to work for the Ivers & Pond Co. of Cambridge in 1923 "chipping" backs for 10¢ a piece. He also worked for the Geo. Steck factory. His adeptness was quickly recognized at the Ivers & Pond Co., prompting the management to start grooming him for a job as a troubleshooter on the road for the company. This never came about due to the sale of the company about the time of the great depression.

In addition to his musical career, he worked as a press operator for the former *Enterprise & Journal* in Orange, and was an automotive mechanic while giving piano lessons on the side.

In 1923, he married the former Mary L. Neylon of Barre. He leaves three daughters, Marion Deegan of Orange; Sylvia Lawson of Lewisville, TX, and Nyca Hall of Westerly, RI; nine grandchildren and five great-grandchildren.

On a personal note, I have been privileged to know Erroll since the early 1940s when I was in high school. He was an inspiration and an immense help to me in getting into the piano business. We have attended many conventions, seminars, and various piano functions together. We have talked for countless hours about pianos and related subjects. He has also been a great help to a host of others starting in the piano business, too many to mention here, some of whom have gone on to occupy important positions in the Guild. His sense of humor which was evident to many remained with him until the end. I shall miss him and be eternally grateful for all his help and companionship. I'm sure others could utter this same statement.

Donald L. Ainsworth, RTT

PTG's Texas Roundup

1990 Institute Instructors

Here at last is the PTG Annual Convention *Journal*! This is PTG's Texas Roundup of Instructors for the Institute. When you read these class descriptions and look at the pictures of the Institute Instructors you will be ready to "let us put our brand on you."

Pick out the classes you want to attend at the Institute in Dallas, because in next month's *Journal* we will have the complete Institute class schedule made up for you. This will give you plenty of time to plan your entire week at the PTG Annual Convention. The Institute begins on Sunday, July 8, and ends Wednesday, July 11, 1990.

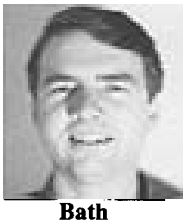
Dick Bittinger
1990 Institute Director

By now you should have your Convention registration so please send it to the Home Office at once, and they will send you a Hyatt Hotel registration. Again, please act promptly so you will have a room at the Hyatt Hotel.

Let me now introduce to you our Institute Instructors for the 33rd Annual Convention in Dallas, Texas.

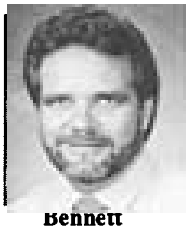
Dallas 1990 Institute Instructors

Baldassin



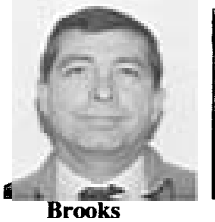
Bath

Beck



Bennett

Brandom



Brooks

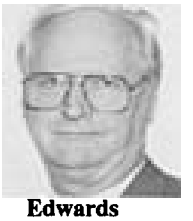
Burger

Carbaugh

Chandler

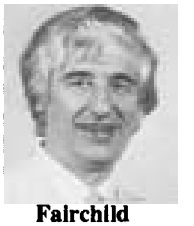
Defebaugh

Drasche



Edwards

Elrod



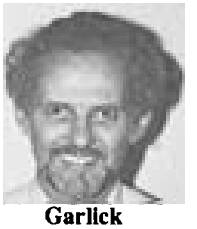
Fairchild

Fandrich, Del

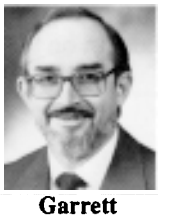
Fandrich, D.

Fischer

Ford



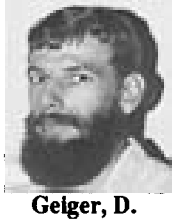
Garlick



Garrett

Garten

Gates



Geiger, D.

Geiger, J.

Graham

Gravagne

Green

Guthrie

Dallas 1990 Institute Instructors


Harvey


Hess


Huether


Hunt


Isaac


Jackson


Lassiter


Leary, J.


Leary, K


Light


Mair


Marinelli


May


McCall


Mehaffey


Mohr


Morton


Neal


Neblett


Nele


Phillips


Pile


Potter


Rappaport


Reiter, J.


Reiter, M.


Robinson


Roseburrough


Rostkoski


Russell, B.


Sanderson


Smit


Smith, S.


Smith, V.


Snyder, D.


Snyder, W.


Spithill


Suzuki


Travis, J.


Trivelas


Tublitz


Van Stratum


Vincent


Walter


Webb


Weisensteiner


Whitcomb


Young


Zeiner

Independent Instructors

Fred Bath — *Baltimore, MD, Chapter*
Impact Hammer Pitch Raising

This is a basic class in the use of the Mehaffey impact tuning hammer as applied to raising pitch on vertical pianos. Some of the topics to be covered are: the use of an impact hammer, care and maintenance, modification options, and common sense techniques for learning or refining impacting motions. Pitch raising is the ideal medium for learning and experimenting with this tool. You will have the opportunity to actually use the tool under supervision.

Piano Work Without Pain

Working with pianos can be physically challenging! Many technicians go about their work in pain and discomfort. While there are many causes of pain, this class will deal with how we can understand and modify our own movement patterns and have a positive influence on how we function on the job, not just in terms of comfort, but often of productivity as well. Bring your own tools if you plan to participate. Be prepared for a moving experience with the Alexander Technique!

Don Bennett — *Atlanta, GA, Chapter*
Bridge Capping

A common sense approach to this important, yet often overlooked part of rebuilding. After a brief discussion of when we need to recap, we'll show you how, outlining some of the tricks and hazards.

Notch Your Own Bridge

A hands-on continuation of the Bridge Capping class with the emphasis on putting a chisel in your hand and helping to build confidence for your first attempts.

Steve Fairchild — *L.I.-Cristofori, NY Chapter*
The Perfect Tuning

Steve has completed a 16-year project of converting aural tuning into visual terms. It basically deals with taking the inharmonicity constants for each note and creating a three octave temperament. Then the bass and treble tuning curves are established. It's a new technology, never seen before.

Efficient Tuning

Would you like to reduce your tuning time by 15 minutes? Steve is in the "Guinness Book of World Records" for tuning a piano in four minutes and 20 seconds. His methods of time saving moves and coordination will undoubtedly help you to be more efficient in your tunings.

Del Fandrich — *Memphis, TN, Chapter*
Practical Piano Theory

Various designs of pianos and what effect design has on the performance. Other things to be discussed will be string size and length, soundboard crown, bridges, etc.

Practical Piano Theory — Part II

A more in-depth study with class participating with feedback on some of their ideas.

Bill Garlick — *L.I.-Nassau, NY, Chapter*
Harpsichord Maintenance

This class is intended to give the piano technician a better understanding of the harpsichord and how it differs from the piano. Techniques of maintenance to be covered will be minor repairs, action regulation, cutting and voicing plectra. Bill will also do a historical tuning appropriate for the instrument.

Re-bushing And Re-pinning Flanges

This class will cover as many aspects of piano action work as time permits — loose and tight centers, re-pinning, re-bushing, broken centers, friction parameters, lubricants, and effects of inappropriately pinned centers.

Joe Garrett — *Portland, OR, Chapter*
Sharpening Tools

To do good work in the field and the shop, you will need sharp tools. Joe wants you to bring along to this class some dull knives and screwdrivers to be involved hands-on for this needed skill.

Setting Up Shop

Many technicians attempt to do perfect work in less than perfect conditions. I planned my shop layout before moving into the space, and took the time to set it up to suit my rebuilding needs. To have a good working and efficient environment, you must take time to plan a shop set-up.

Tools And Modification Of Tools

I've never met a tool I didn't modify. Being a basic "tool nut," over the years I have found our tools are minimally adequate. However, with a little ingenuity, they can be made to do a better job and be more efficient to work with. Joe will have with him many of the tools he has modified for you to check out. You are urged to bring a tool/do-dad to class to share.

Dan Gates — *Reading-Lancaster, PA, Chapter*
Rebuilding The Player Piano

This class will deal with basic rebuilding techniques, materials, tools and information. Dan will actually show you how it can be done.

Rebuilding The Player Valves

Dan will show you how to deal with specific valves in the player piano actions like the primary, second, unit, pouch, slide, knife, etc. For this class you will need a medium screwdriver and a small utility knife to work with.

Reed Organ Rebuilding And Repairing

Basic rebuilding and repair with materials, tools, and techniques. Differences between players and pump organs will also be covered.

Susan Graham — *San Francisco, CA, Chapter*
Grand Reconditioning

This is a class about working on *used* grand actions. Emphasis is on efficient techniques for counteracting the effects of use and age through cleaning, lubricating, action center treatment and spot repair or replacement of parts. Some discussion of regulation is also included.

Grand And Vertical Wippen Reconditioning

A hands-on class including cleaning, lubricating, action center treatment, spring and cushion replacement, selecting and handling replacement materials and tools. You will need repinning tools, tweezers, and a sharp knife or safety razor blade for this session.

Ward Guthrie — *Montana Chapter*
The Art Of Troubleshooting

Ward has a unique way of teaching this class. You will surely remember the next time on the job just what to look

for and what to do about it.

Jim Hess — *S. Central PA Chapter*
Vertical Reconditioning

An informative class on common repairs and necessary reconditioning for regulation of actions. This will help you keep the consoles and spinets of your customers in tip-top shape.

String Knots And Loops

Learn how to repair broken strings and replace new single strings with loops. Jim says it's easy if you know how, and he will show you just how to do it.

Newton Hunt — *New York City, NY, Chapter*
Handling Hard Hammers

I have been experimenting with different approaches to handling the super hard hammers that are all too common on the oriental pianos, and I would like to share some of those techniques with the convention attendees.

Tuning The Bass And Treble

Newton will help you with your tuning in these two problem parts of the piano. Also, part of the class will be on advanced tuning techniques. This is not to discuss how to tune a piano, but will go over a number of techniques that help improve what anyone is doing, both aurally and electronically.

Howard Jackson — *North Central Louisiana Chapter*
Keytops, Sharps And Repairs

The class not only covers a practical method of key recovering anyone can learn, but many other repairs and adjustments that must be taken into consideration to make your finished product professional.

Janet Leary — *Cleveland, OH, Chapter*
Controlling The Liabilities Of Your Business

Janet will give you a formula you can use based on basic financial management principals to assist you in making solid business and insurance decisions.

Troubleshooting The Piano Service Business

This will be a forum type class, and will cover basics of the business disciplines as they apply specifically to the piano service. The second portion of the class will then be open to a frank exchange to solve your specific business related problems.

Kevin Leary — *Cleveland, OH, Chapter*
Tuning — Do Your Own Thing

This class is for those who like what they are doing but have some problems. Help enhance your existing skills while maintaining your income and eliminating the pain. Bring your own tools for help with specific tuning problems.

Tom May — *Indiana Chapter*
Retirement Taxes And You

Here's a tuner and a professional tax preparer with a plan which emphasizes keeping record-keeping simple. There is no mystery in taxes, only people mystified about taxes. Tune your lives away, but let's go comfortably with a nest egg waiting at retirement. Let the IRS help you fund your IRA.

Norm Neblett — *Los Angeles, CA, Chapter*
Hands-On Voicing

The basic principles of tone regulation including string voicing, hammer filing, and needling. Each class member will have an opportunity to participate. A two-page instructional handout will be provided.

Gary Neie — *North Central Louisiana Chapter*
Vertical Damper Replacement

Gary will include three types of felt removing, four or five damper flange and lever replacements, plus damper felt replacement.

Vertical Pinblock Repair

Now see how this piano repair is done. Gary will also show you how to repair separated soundboard ribs and soundboard cracks. For that loose tuning pin, he will do four or five epoxy repairs on loose tuning pins.

Pris Rappaport — *Austin, TX, Chapter*
Grand Hammer Installation — Factory Method

Everyone gets to participate in this hands-on class that will take the mystique out of grand hammer gluing. Experience reaming, gluing, and filing hammers on an action model. This is a factory method that results in speed and quality.

Chris Robinson — *Connecticut Chapter*
Mastering The Grand Action

This will be an advanced class covering the theory of action construction as well as practicalities of making the modern grand piano mechanism work as well as it possibly can. Replacements of action rails and parts will be shown and how to get a new set of parts to operate at maximum efficiency without prior knowledge of what the spread and other internal specifications are.

Grand Voicing

The grand voicing workshop will cover practical, applied techniques of improving the acoustic response characteristics of the piano in question. How to visualize the desired result, and then how to go about the mechanical processes of achieving that result.

Maurice Roseburrough — *Central Iowa Chapter*
Tuning The Old-Fashioned Way

Demonstrate and discuss the need of tuning the old-fashioned way covering topics such as: Soundboard and fundamental string sound together with partials in string sound, experiment in pitch memory, mechanical source of pitch and sound versus electronic, correct tuning without counting beats between intervals, and much more.

David Rostkoski — *Eastern Washington Chapter*
Renting Pianos For Fun And Profit

You will get information and ideas regarding rental agreements, insurance, credit checks, maintenance and moving, bookkeeping, option-to-buy, depreciation, choosing a name, designing a letterhead, and tax reporting. See how starting small enables you to learn as you go, but allows you to be a professional at the same time.

Bob Russell — *Cleveland, OH, Chapter*
Practical Appraisal And Evaluation

This class will be a hands-on appraising workshop. We will cover evaluating pianos as well as how to appraise pianos for the customer, buying, selling, and insurance appraising. Plus the do's and don'ts of appraising.

Bob Smit — *Ottawa, ON, Chapter*
Action Parts To Recondition

To make a grand or vertical action respond better it only makes sense to go over the action parts before regulation. You will need your regulating tools for this working session.

Virgil Smith — *Chicago, IL, Chapter*
Hammer Care And Voicing

This class on hammer care will differ from the usual presentation in that I am not talking only about a one-shot deal, but also will discuss the treatment of hammers at every service call to prolong the life of the hammer and still maintain the best tone quality throughout the life of the hammer.

Carpal Tunnel And Tuning

In this class I will explain and demonstrate how to strike the note with great force and still achieve a tonal clarity, and manipulate the tuning hammer so as to avoid tension and physical problems such as carpal-tunnel syndrome.

Dave Snyder — *Reading-Lancaster, PA, Chapter*
Estimating Piano Work

In-depth discussion of variables involved in running a profitable piano shop.

Key Weighting

Dave will demonstrate the weigh off procedures, various friction point effects on touch, weight of action parts effect on touch, etc.

Willis Snyder — *Reading-Lancaster, PA, Chapter*
Notching Bridges

This class will include a few slides, theory, actual scale layout, surface preparation, drilling, notching, and pinning.

Manufacturers' Symposium

This class will be presented after the closing luncheon from 2:30 to 4:30 p.m. If you have a question for any of the piano manufacturers or suppliers, write it down and put it in the box for this class at the PTG registration desk. You may or may not sign your name, and while sitting in on the class, if you think of another question, speak up. This if the best round-up of experts you will see for a while. Willis Snyder will be moderator for this session.

Pat Spithill — *Hutchins, TX*
Market Builders

Pat will show you the key to acquiring and maintaining clients. During his sales career, Pat took over four sales territories, and within one year produced an increase of over 200 percent from the previous year's sales volume — not once, but all four times. Meet the man who sold a $92,000 grand piano.

John Zeiner — *Lehigh Valley, PA Chapter*
Steinway Lyre Reconditioning

Did you ever take a Steinway lyre apart? If not, attend this class to check this operation out first hand, and learn the bottom end of the piano.

Piano Manufacturer & Supplier Company Sponsored Classes

American Supply — **Bob Beck**
All About Piano Plates

A complete tour through the plate making process, with color slides and actual foundry materials. Topics include welding of broken plates, agraffe and pinning techniques, plus refinishing tips.

Supply House Tour And Tools

Check out our new tools and supplies, and see how our shop does it for you.

A. Isaac Pianos — **Ari Isaac**
Voicing

Successful voicing makes a piano sound larger, richer, more powerful. Voicing is easier than you think. A well-voiced piano makes the strongest impression on your customer. Come in and find out!

Baldwin — **Kent Webb**
Grand And Vertical Manufacturing

This class will be a slide presentation of procedures used in manufacturing pianos that will give insight into understanding piano construction. An open discussion with a question and answer format will enable technicians to improve service techniques in reference to methods used at Baldwin.

Bosendorfer — **Denny Burger**
New 1990 Bosendorfer

The class will cover all the new changes with the Bosendorfer piano, special or unique technical items to the Bosendorfer, plus other service and voicing on this new 1990 piano.

Brooks, Ltd. — **Wally Brooks**
Grand Hammer Installation

Class to cover ordering, boring and hanging of grand and upright hammers with some hands-on classwork.

Chas. House And Sons —
Peter Van Stratum
Felt — How And Why?

I normally have six to eight types of felt for each class member which we discuss in detail. I also give away two 1/2-yard samples of bushing cloth and samples of raw wool, blends, woven only, and pressed felt. All this felt to compare by feeling the difference, and you get to keep some of the samples for your repair box.

Dampp-Chaser, Corp. — **Bob Mair and Steve Smith**
Some Aspects Of Selling

Steve Smith's prior experience includes top selling, marketing and management jobs with Springfield Instrument Co. and Sunbeam. He will combine his broad experiences with his four years of exposure to our industry to help you increase your effectiveness in dealing with your clients, dealers and sources.

Grand Installation

Bob and Steve will show you just how to install the humidity control system from start to finish on all types of grands. Do you know why the humidistat is turned upside-down for a grand installation?

Vertical Installation

Is one Dampp-Chaser enough in a vertical piano? For the correct installation of the humidity control system in a vertical piano, be sure to take part in this class with Bob and Steve.

Fandrich Designs, Inc. —
Darrell Fandrich and Chris Trivelas
Grand And Vertical Action Design

The weak design link in the entire industry is the vertical action. This class will describe the solution to the problems of the vertical action, and how it leads to a radical new grand action.

How It Really Works

A deeper understanding of action design and function is a valuable asset in diagnosis, repair, and rebuilding.

Ford Supply — **John Ford**
New Tools

John has a variety of special tools to make that piano easier to repair. You will get a chance to try them out for yourself in this class.

Huether and Saucier — **Charlie Huether**
Vertical Tuning Made Easy

Charlie has some tips for that "bread and butter tuning" you will be able to use on the job. Plus you will have a chance to use a new type of tuning hammer to make tuning easier.

Ibach — **Evan Tublitz**
Servicing The European Piano

My class is designed to be an introduction to European piano for the North American technicians who do not have much experience with these fine pianos. I will discuss their differences in construction, tone properties, action performance, and service idiosyncrasies. Also a short slide tour of the Ibach Factory in Schelm, West Germany.

Inventronics, Inc. — **Al Sanderson**
Remember Your Finest Tuning

Now with stored tunings, you can tune any pipe organ or piano quickly and accurately. You won't have to remember how great your last tuning was, you simply recreate it.

Tuning With A Visual Aid

In this class Al will show you step by step just how to properly use the visual aid in acquiring the best tuning. If you have a visual aid and want to bring it to the class, please do, and don't forget your tuning tools.

J.M. FABRICations — **Jennifer and Mike Reiter**
Cleaning And Keeping Pianos Covered

Field applications of cleaning techniques for soundboards, plates, tuning pins, strings, ivories, etc. We will discuss furniture upkeep and hints for clients. The other portion of our class will deal with the reasons for covering an instrument and the options available.

Kawai — **Chandler and Harvey**
Damper Systems: Maladies
And Mysteries

Tired of spending too much time unraveling those damper riddles? This comprehensive overview of damper/pedal dilemmas will offer some insights to add to your cache of technical skills and cash to your bank account. Be prepared for something other than a wire-bending session.

Kimball —
Lassiter, Light and Weisensteiner
Troubleshooting The Grand
And Vertical Pianos

This new class for Kimball is a composite of answers to the most frequently asked questions technicians have asked the Kimball service department over the last 30 years. It is a very detailed class that covers every aspect of troubleshooting and repair stemming from a combined total of almost 100 years of manufacturing and design experience from three instructors.

Concentrated Grand Regulating

Detailed class of the actual regulating once all the prep work is already done. Class uses a detailed 47-page manual, computer-generated color slides, and the famous Kimball high-speed (slow motion) film of a working grand action.

McCall Enterprises — **Ruth McCall**
Glues And New Tools

Now you can try your skill of hammer shaping using the McCall mini-belt sander. Also information on use of epoxies, glues, and lubricants in piano repair.

Pacific Piano Supply — **Mehaffey and Morton**
New Tool And Products

This class will feature the Mehaffey tools and how best to use them, along with a few more that Francis has made recently.

Pianotek — **Bob Marinelli**
Vertical Hammer Installation

Bob will present criteria for deciding whether a piano needs and merits new hammers, and how to explain that need to the customer. He will also discuss how to order, prepare, and voice hammers. The class will be invited to take part in the hands-on installation.

Randy Potter School — **Randy Potter**
Dealing With Dealers
And Manufacturers

Dealing with dealers includes: understanding dealers, tuning and service arrangements with dealers; and unscrupulous dealers and your role as a piano technician. Dealing with manufacturers includes: why we do warranty work, seven rules for warranty service, providing factory-authorized warranty service, and ordering parts from manufacturers.

Renner — **Rick Baldassin**
Hammer Construction

This class will cover important aspects of hammer making, as well as hammer voicing. You will see Renner's hammer making process from beginning to end, with the aid of illustrations and slides taken during Rick's recent trip to Renner's factories. Following this, you will see demonstrated how to voice these hammers, including some European voicing techniques which Rick observed to produce a desirable musical tone.

Hammer Prep

This class will cover all of the processes of hanging new hammers; from choosing the hammers, to boring and shaping, and finally installing the hammers on the shanks. Important principles of hammer selection, preparation, and pre-voicing will be discussed.

Samick — **Dick Elrod**
Restore The Vertical Action And Keys

Tricks of the trade in making the action and keys like new for a better performing piano.

Schaff Piano Supply — **Bob Carbaugh**
Jaras Tools

Instruction and demonstration on the full line of Jaras specialty tools.

Steinway & Sons — **Gary Green, Michael Mohr, and Fred Drasche**
Grand Dampers

The installation and proper regulation of the Steinway underlever system including proper sostenuto and sustain pedal regulation procedures. Also troubleshooting dampers for rings, touch, evenness, and shut-off.

Grand Damper Installation

This class of damper replacement will include best type of glue to use, correct size of felt, wire bending, proper lift and lost motion.

Teflon Bushings

Explanation of how teflon bushings function and how to service them.

Superior Imports, Ltd. — **George Defebaugh**

Hear What You Are Tuning

This class is designed to help with learning to estimate interval beat speeds, where the beats are coming from and how to avoid listening to the wrong ones in the temperament area. Of course we will have to touch on hammer technique so the beats stay where we put them.

Travis Publications — **John Travis**

Tips On Tuning

There will be a handout consisting of a general outline and procedure of my own system of tuning. An interval study in detail but listening and hearing the coincident partials of the tones with which I am tuning. Up a third, down a fifth, etc. checking how much expansion and contraction for each in cents, and other tips on tuning.

Tyson Piano And Organ Co. — **Brent Fischer with Kay Miscavage assisting**

Repair And Installation Of Agraffes

Did you ever have an agraffe break on the job? Did you have the right tools to do the repair? The class will cover the different tools and ways to repair a broken agraffe. You will really get to do a repair in this class.

Walter Piano Co. — **Charles Walter**

Practical Design For Fine Verticals

An interesting and practical class on the design and building of a handcrafted piano.

Western Iowa Tech — **Doug Neal**

Field Repairs

This hands-on class deals with field repairs that demand immediate attention. The tools and materials that will be supplied to the class are common to the piano technicians' tool kits.

Webb Phillips & Associates — **Webb Phillips**

Bushmaster Class

Bushing a set of keys with factory speed, factory precision, and quality in minutes instead of hours

Wurlitzer — **Lonnie Young**

Vertical Regulating

Our class plans are following after Wurlitzer Service Manual Material which will include discussion of key and action preparation, removal and replacement, action center treatment, center pin replacement, and all specifications for regulation adjustments.

Yamaha — **Edwards, Whitcomb, Suzuki, Brandom and Garten**

Aftertouch

What is it? Where do you get it? How much is it? Do we need it, etc. These are all very important questions, and they will be answered by the Yamaha team.

Servicing The Disklavier

This will be an all-day, in-depth class on the Disklavier and what to do for your customer when something goes wrong. If you are into this type of work, then don't miss this session. Class limit is 20 people.

Young Chang — **Alan Vincent**

New Piano Preparation

This class will cover the basic work required to prepare a new grand piano for sale in the dealer's showroom. How to get the best results for your time will be the main subject area. Included will be regulation and voicing tips and demonstrations and common preparation procedures. This will be a class which will be important for any technician wishing to improve his or her grand piano service skills.

Servicing Touch Weight Problems

This class will be a demonstration of common touch weight service problems and how the technician can most effectively deal with them. Topics covered will be action center service, key weights, hammer shape and weight, and action mechanics.

Special Classes

Nicholas Piano Co. — **Nick Gravagne with Dave & Jim Geiger assisting**

Soundboard Installation

This class covers everything from removing an old soundboard to fitting and installing a new one. Two grand pianos will be on hand so there will be much to see and talk about, both practical and theoretical, as the work is actually done in class. Piano teardown, measurements, and record-keeping are integral to any rebuilding, but particularly so with soundboard installation. Learn how to measure for pinblock, plate, and bridge location, how to interpret downbearing measurements and how to fit and install a crowned soundboard.

Schaff Piano Supply and Tyson Piano & Organ Co. — **Dwight Pile and Brent Fischer with Kay Miscavage assisting**

Polyester Touch-Up And Refinishing

This is an all-day class. With his half Dwight will have each person work on his or her own practice board and completely repair a scratch and chip. With training received at this course, and a bit of practice, the participant will be able to repair scratches and chips in black and clear polyester finishes.

The other half of this deals with piano refinishing. Brent will show you the correct way to use a spray gun and experience the feel of actually spraying. Also included: removing all the old finish, sanding, repair, etc. Please don't forget to bring your shop apron for these classes.

Volunteer Committee Classes

Advanced Player Piano Forum — **Dan Gates, Reading-Lancaster, PA Chapter**

Specific player problems, products, supplies, and materials. Bring your information to share with fellow technicians.

College & University Technician's Seminar — **Tom McNeil, Chairman**

If you work for a college or university full or part-time, then this class is for you. This group will explore the problems and opportunities unique to working in insititions. The featured speaker is Owen Jorgensen on "Educating Piano

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Technicians For University Classes."

Examinations and Test Standards Committee

Preparing For The Technical Test — Bill Spurlock, Subcommittee Chairman

If you will be taking the technical test soon, be sure to sit in on this class. You will be able to find out what is expected of you in becoming an RTT.

Administering The PTG Technical Test — Bill Spurlock, Subcommittee Chairman

All aspects of technical testing will be covered, including helping examinees prepare and gauging their readiness, aquiring the exam props, running the exam and paperwork handling. Please note: *Only RTTs may attend this session.*

Preparing For The PTG Tuning Exam — Al Sanderson, Inventronics, Inc.

If you are going to take the tuning test in the near future then make sure you sit in on this class. There will be a demonstration of the tuning tolerance required, plus a general walk-through of the exam to familiarize everyone with what it contains.

Administering The PTG Tuning Exam — Mike Travis, Subcommittee Chairman

This class is for CTE's and CTE trainees. Included in the material presented will be recent revisions of the exam which the examiners should be aware of. This should help examiners regain confidence in the exam procedures. Please note: *Only RTTs may attend this class.*

Teacher Relations Committee — **David Rostkoski, Chairman**

Presenting Programs To Teachers

This session is for PTG members, chapter presidents and program chairmen who are in some way developing a public relations plan directed at local music teachers and their students. Make sure your chapter will have a representative attend this class.

Teacher Relations Committee — **David Rostkoski, Chairman; Ginny Russell**

Piano Teachers And Their Trade

This class is for all music teachers who are piano technicians, and auxiliary spouses who are attending this PTG Annual Convention. Ginny Russell is a full-time piano teacher, and ready to share some special problems, stories and tips to make your teaching job easier. David Rostkoski, Teacher Relations Committee Chairman, invites you to attend.

Visually Impaired Committee — **Ken Serviss, Chairman**

Visually Impaired Drop-In Center

The location for the drop-in center is the Executive Room, which is on the second floor Atrium Level. The Executive Room is where all of the Visually Impaired classes and meeting will be held.

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Dallas' West End District

Thom Tomko, RTT
Dallas Chapter President

As the outgoing Dallas Chapter President, I would like to invite all in the PTG family to this year's National Convention and Institute in Dallas. The members of the chapter are looking forward to meeting you and hosting this great event.

In the past few years the host chapter has traditionally planned a social activity for those who attend. This is always done during the only free night from any scheduled convention event. Dallas Chapter members feel that many who attend the convention may wish to explore the city and its attractions during this free night. But since tradition is hard to break we have worked up a small compromise. On Sunday, July 8, classes will end at 5:30 p.m. At 6 p.m. the Dallas Chapter, with the support of Young Chang America, will sponsor a Recital Hour of some of the top piano-playing PTG members who have kept up a high performance level. Dean Shank of Houston, TX, will be lining up the talent for this first-ever national convention event. By limiting the recital to one hour, you'll then have time to leave for a night out on the town. Let's explore one of these areas for cutting loose.

A view of the Reunion Tower from Dallas' West End

When you come to Dallas this summer you'll hear a lot about the Dallas West End District. This section of town, just off the Trinity River, is said to be where the city of Dallas began. In the early 1800s this 55-acre district was a thriving frontier outpost. In 1881 the Pacific Railroad brought commerce and the Red Brick Warehouse District to life. Once known as important garment and agricultural centers, these warehouses are now sources for food, fun, and entertainment. Neon-lighted nightclubs, pubs, piano bars, restaurants, and great shops are here for your delight.

Come down and try some of the totally Texas foods like pit barbeque, grilled steaks and chops, chili, Tex-Mex, and all that chicken-fried home cookin'. Some of my favorite places are *Tolbert's* — chili, Tex-Mex; *Tony Roma's* — ribs, barbeque; *The Palm* — steaks, chops; *Spaghetti Warehouse* — for what else? *Ferrari's* — Italian; *On The Border* — Tex-Mex, and *Hooters* — for the best chicken legs and the best lookin' waitresses in the South Central Region.

If you like to shop, the West End Market Place is your Heaven. With over 85 retail shops, antique stores, game areas, and a food bazaar, you'll find something of interest there for everyone. You can surely find all your Texas memorabilia here. The Market Place is also the home of Dallas Alley, the city's premier nightspot, containing nine different nightclubs.

To get to the brick-paved streets of the West End, one must use the underground walkway connecting the Hyatt Regency to the handsomely refurbished Union Station. From outside the Station head six blocks due west past the Kennedy Memorial and Museum until you come upon the red brick arches of the West End. Those who choose not to walk may wish to choose some other modes of transportation. The Dallas Area Rapid Transit (DART) shuttle offers a 35¢ fare to the West End by day only. The ole taxi cab can get you there from the hotel for a few dollars, or why not be the romantic and ride the horse and carriages to the West End?

So come see this unique and wonderful part of Dallas and experience a reminder of its past as we enter it's future. Y'all come and let us put our brand on you!

Economic Affairs

Networking

Larry Caldwell
Nebraska Chapter

According to Webster's New Collegiate Dictionary, network is defined as an interconnected or interrelated chain, group, or system. It has been my experience that networking plays an important part in building a business. If you are starting a business, restarting a business (as I am), or continuing an established business, you must seek out prospective customers that can use piano service.

I am going to begin by mentioning some of the more obvious places or individuals that can use our service. Music stores that sell pianos, public and private schools, churches, community or state colleges, concert halls or community concert associations, restaurants, piano bars or lounges, community centers, and last but certainly not least, piano teachers. If you are looking for new business, the above list is a place to start.

Pianos in private homes are another good source of gaining piano service customers. They may be the students of piano teachers or anyone involved with one or more of the groups or organizations mentioned.

Many of us are active in one organization or another and through these associations it is soon apparent what each other's job or vocation is. By making these acquaintances we have expanded our network base. I have been active at one time or another with church choir, community chorus, community orchestra, Elks Lodge, Masonic Lodge, Toastmasters International, Boy Scouts and Little League baseball. Another group I have been involved with in the past and will soon be involved with again is barbershop quartet singing (SPEBSQSA). This is a wonderful organization and offers not only enjoyment but networking opportunities as well. For those of you who attend PTG National Conventions there is usaually a group of barbershoppers practicing so they can perform at the final banquet and/or luncheon.

Another way that I have chosen to gain exposure in my location is by performing recitals. I have recently done recitals as a French horn soloist in McCook, NE, and Holyoke, CO. A friend who teaches public school music in the area and I have enjoyed this pursuit. It not only gets my horn out of the case, but also gains me piano service business. So, I guess in a way I am both the "Unseen Artist" as well as the "Artist."

From the experience I have gained by being a public school music teacher in the past, my recent recital work and the speaking ability I am gaining from Toastmasters, I recently presented a 30-minute program for a local elementary school concerning the history of the French horn. However, we did do two French horn/piano pieces as part of the demonstration.

I have given you the ways I attempt to set up a networking system. I may have a school music teacher in one location, a private piano teacher in another, a church choir director in yet another, friend, relative, former classmate, former student, or fellow RTT I get referrals from. I am sure there are many different ways to develop a network plan. I hope I have given you food for thought and you can expand your network base by whatever method you choose.

TECHNICAL FORUM

Shimming Cracks In Soundboards

Susan Graham
Technical Editor

This discussion of soundboard repair and refinishing began in February with methods for clamping the board to reglue it to the ribs. The condition of delaminated ribs is usually associated with a crack in the board; when the delamination has been remedied, it is time to turn attention to the crack.

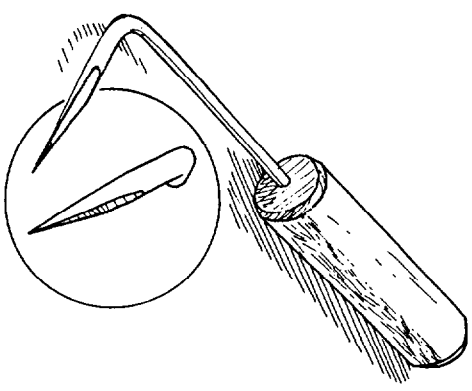
Shimming a crack is most accurately regarded as a cosmetic repair: the notion that drying and shimming a board will help restore crown has been discounted. The object of shimming, then, is to improve the appearance of the piano. Any method chosen should bear in mind questions of cost effectiveness for time spent, and even whether the board is best merely refinished rather than hacked-up and discolored with excess or poorly-fit shims or fillers. Even the best-fit shim is not necessarily trouble-free: it is not uncommon for a crack to open up parallel to a shim several years after installation. This is particularly true in parts of the country subject to wide swings in climate. If you do live in such areas and choose to shim boards, it becomes even more important than usual that customers protect their investment in your work with a good, complete climate control system.

Some technicians have switched to using "fillers" for board repairs, which minimizes time invested while improving appearance. Epoxies used for this purpose generally have some "body": these can be either ready made paste types, or liquid epoxies filled with a suitable material. These include spruce dust, microfibers or other fillers carried by industrial epoxy suppliers (including marine supply yards) and/or powdered stains. Use of super glue as a filler in soundboards is still in its infancy and I have not tried it myself: in Ed Dryburgh's handout he suggests using either the red (thin) or orange (medium) as a bonding agent when inserting shims, but makes no mention of using the glue alone as a filler.

Although filling is much faster, and, if color is controlled, can yield a cosmetically pleasing result, I prefer to fit and insert a wooden shim. An epoxy fill does not have the same flexibility or reaction to moisture that the surrounding wood does: the tendency is for epoxy "shims" to work loose as the climate cycles, or for this very hard material to set up too much resistance to the surrounding wood, exacerbating the problem of future crushing and resultant cracks. The exception may be very shallow cracks in the bass corner of a soundboard. This section has little flexibility and is often isolated by a cutoff bar underneath the board. If there are fine cracks in this area which do not open at all even after drying, I may choose just to clean out the surface dirt with the point of the shimming knife and putty in a line of suitably tinted epoxy as a cosmetic fix for a cosmetic problem.

In almost all cases, however, I opt for the wood shim. Shim stock can be purchased from our suppliers, or can be cut on a table saw from well-seasoned spruce (old soundboards are one source). Cutting shims is tricky: they want to come out either too thick or paper thin.

figure 1: shim knife



Cutting shims safely and efficiently without multiple re-setting of the saw blade is a challenge to one's ability to pre-visualize results.

Shims should be uniform in thickness and width along their entire length. It is undesirable for the pointed edge to be splintered or ragged. Some shims can be cleaned up along this edge with light sanding; discard those which are very uneven. As you select shims for use, make arrows on the top (lightly in pencil) to indicate grain or planing direction. Scraping the board (which is done after shimming) will be easier if the grain of the shim runs with the grain of the existing board. There will be instances near the case and bridges that it may be much easier to plane, chisel and scrape a shim if the planing direction runs a particular way: figure this out before gluing, and make the marks you need to achieve the desired orientation. If you decide to run the shim one way while the board runs the other, plan on doing more sanding and less scraping.

Place shim stock on the soundboard while it is drying. This helps insure that the board and shims are at the same moisture content (which should be very low).

The next item to consider is the shim knife. These can be made from the tang end of a file, heating, bending and shaping it to a suitable blade, or they can be purchased. I like the one pictured (fig. 1) which came from Ford Piano Supply. It has a very narrow blade which tapers *away* from the handle and takes and keeps a good cutting edge.

Although one sometimes hears that the shimming knife should be used to compress rather than remove wood to shape the crack, I do not believe that this is advisable. Compressing wood sets up the likelihood that it will expand in the future, crushing and creating

multiple-crack compression ridges on either side of a newly inserted shim.

Therefore, opening up a crack for a shim is a wood removal operation. I sharpen the two cutting edges of the shimming knife accordingly (using a stone as described in February, but without drawing the final wire edge). The resulting sharp, narrow-bladed tool is relatively easy to draw through the wood, peeling off shavings from both sides of the crack. If a wider aperture is necessary to accommodate an appropriate shim, I carefully lean the knife very slightly to one side and then the other, keeping the "v" as symmetrical as possible. It takes skill and practice: carelessly leaning the knife or allowing it to wander can result in a varying-width crack, making it extremely difficult to install a well-fit shim. The straighter and more parallel the edges of the crack as they are opened, the better the fit. It is also necessary to maintain uniform depth of the blade so the cut is a symmetrical "v" along its entire length.

The knife should have a comfortable handle which affords good purchase for your grip: even with the sharpest cutting edge, pulling a knife through a crack to remove wood requires hand and arm strength (shim a few boards and you'll never have trouble opening pickle jars again). A comfortable, nonskid grip will reduce fatigue. My knife came with little or no finish on the plain, cylindrical handle; this has proved less tiring to use than a nicely finished (and therefore slicker) handle.

The board has been dried by introducing moderate heat and draping the case with cloths (not plastic) while dehumidifying the entire shop. The aim is to achieve drier conditions than the piano will ever undergo naturally. Don't get carried away with this, however. In conversations with Dave Snyder and Nick Gravagne, both mentioned that excessively drying a board for shimming is likely to do more damage than good: the heat can adversely affect other glue joints in the piano. Nicholas advises using a space heater to achieve 85°-90° F for several days, reasoning that that is the maximum temperature likely in a home. In other words, drying a board for shimming should not be as intensive as drying a new board for manufacture and installation. The wood should be brought below possible ambient humidity conditions, but not so low as to be destructive.

After the initial drying, climate control should be maintained while work is being done. I use two Dampp-Chasers and a space heater under the piano, and dehumidify the shop during initial drying. The Dampp-Chasers and the dehumidifier continue to run while the shims are fit and glued.

At this point all surface dirt has been removed by washing or wiping with naphtha, the board has been sufficiently dried, and any delaminated ribs have been repaired. Your knuckles will think kindly of you if you remove the nose bolts: make reference marks or measurements so they can be reinstalled to an approximate setting (final adjustment is made after the plate is reinstalled). Tape over the nose bolts holes in the posts and the plate bolt holes around the edge to prevent debris from accumulating in them.

There used to be a prevailing theory that if wedges were forced between the posts and ribs, and the board was then shimmmed, it would help restore crown to the board by the mechanical fit of the shims and the expansion of the wood as it returned to normal moisture content. It now appears that this does not occur, or, if it does, additional crown gained is slight enough to be insignificant. Nevertheless, I do wedge up the board/ribs in several places before I begin shimming. If nothing else, it makes the subsequent job of scraping and sanding more quiet, since the board is restricted from resonating. I find it comfortable to sit on the soundboard itself for some of this work, and although my body weight nowhere near approaches the average downbearing load (I hope), I still feel a little more secure about crawling around in the piano if the soundboard is braced directly against the beams. It also seems possible that when the wedges are removed, the board presses against the glue joints of the shim, helping to clamp them in place (unless the fit and/or glue joint is poor, in which case it may help to push the shim back out of the board).

Cracks occur in soundboards in several patterns. The simplest is the single crack which follows a straight grain line without jumping lines, sprouting multiple cracks, or running into the bridge or case (in which case it probably goes right through the middle of an irreplaceable soundboard decal...) These are usually the simplest to shim.

The first few passes with the shimming knife are often what makes or breaks the final result. They should be done very gently with the tip of the knife, just breaking the surface of the finish on the board and following the crack. Try not to jump across grain lines: if the crack does so, decide which line you want to follow and work carefully over the junction to keep as smooth and straight a transition as possible.

When cracks end in the middle of the board, I usually continue them all the way out to the case: sad experience has taught me that these cracks often lengthen of their own accord later, leaving a very poor looking repair.

The first few passes with the knife set up the path that the blade will tend to follow throughout. If the edges of the crack begin to splinter rather than shave away cleanly, stop. Try pulling the knife in the opposite direction, better to follow the planing direction of the existing wood: avoid pulling out wood in hunks. When you run into places where knots or grain changes are causing the knife to jam with each pass, work them out by changing direction and using lighter pressure. Smooth these so that as you approach the final fitting and are exerting a lot of force to run the knife very deep into the board, it is not inclined to jam or skip up out of the crack (leaving a series of divots across the surface of the board).

The vertical grain of the shim should match the (presumably) vertical grain of the quarter-sawn lumber of the board. Avoid widening the crack asymmetrically, resulting in a "leaning" shim (fig. 2a). Also avoid shimming only the top edge of the crack (fig. 2b), leaving the papery lower edge of the shim hanging free and the interior of the crack filled with nothing but glue. The ideal is a fit along the entire depth as well as length of the shim (fig. 2c).

figure 2: shims

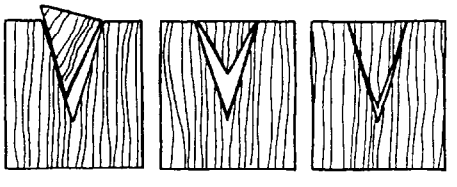
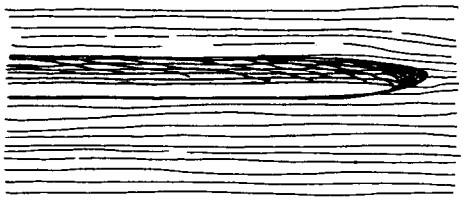


figure 3: boat end shim



If there are shims which end in the middle of the board (in areas of minimal flexiblity, this may be safe to do, rather than extend the crack across the board to meet the case) or which end up against a bridge where the termination is visible, I "boat-end" the shim and crack. (fig. 3) The shim is tapered along the sides and up from the bottom to the top so it resembles the prow of a boat. The crack must be similarly shaped. This makes for a smoother transition from shim to board.

When the final length of the crack has been determined, select the shim for that crack. Keep in mind color, width, grain pattern and planing direction. Try the shim for fit, gently pressing it into place in the crack. Press along the entire length, feeling for sponginess or lack of resistance which indicates a wide spot in the crack (or a narrow place in the shim). Mark these with pencil. Carefully pull the shim free (it will tend to grab where the fit is tight, and pulling splinters loose is undesirable) and work again with the knife to widen the non-spongy areas so the shim can settle into the crack uniformly. Number or make some reference so you always put that shim back into that crack.

In the case of very wide cracks, the ribs may hold up the shim at the lower edge. Rather than remove wood from the ribs, notch the shim where it falls over the ribs.

A well-fit shim should fill the entire crack, should be solid enough in the crack so it does not wobble from side to side, and should not have spongy areas indicating a looser fit. It should stay in the crack of its own accord without excessive pounding or clamping pressure to hold it in place. Some technicians use go-bars or similar clamping arrangements when gluing. This is sometimes necessary where a shim has to curve slightly to follow a grain pattern, but in general the shim should fit well enough to mate to the soundboard without pressure.

Fitting shims requires patience and strength: I do find it best to do this operation in short work sessions, taking breaks as my patience expires. It may be helpfully amusing during all this to meditate on the information that the word "fit" is an archaic past tense of the verb "fight" (as in the song "Joshua fit the battle of Jericho").

Glues And Adhesives:

Aliphatic resin glues, such as Titebond, are among the easiest to use in shimming. They have good bonding strength if the mechanical fit is good, have a relatively long work time, and dry to an inconspicuous clear-yellow color. They do not dry completely hard, however, making them gummy to sand and possibly poor transmitters of soundwave energy. The loss of transducing ability in the board may or may not be significant, and would seem largely to depend on where and how many shims were installed.

The traditional piano technician's glue, hot hide, can be used. It requires extremely careful and skilled handling, however. The board and shims must be kept quite warm, and some quantity of urea added to the hide glue. Otherwise, the gel time is so quick (about 15 seconds) that significant loss of strength occurs. Too much urea as a retarding agent slows down the drying time dramatically, introducing more moisture into the joint than may be desirable. This can also affect the strength of the hot glue.

The woodworker's supply company, Garrett Wade, makes a gap-filling glue which dries to a dark tan. According to Gravagne, it has good inherent strength, dries quickly without soaking into the wood extensively, and beads up, making cleanup easier. It does also have the gap filling quality — and since even the best fit shim will have some minor gap somewhere, this is a bonus. The Snyders, although they do little shimming (prefering to replace boards in most instances) use plastic resin, which is a similar bonding agent.

Resorcinal adhesive has good transmitting ability and is a very strong bond, but it can be tricky to handle, is toxic and dries to a dark brown.

Bonding in wood shims with epoxy is also a common practice. The thinking is to combine the gap-filing and strength qualities of epoxy while keeping the quantity in low enough proportion so the expansion and flexibility differences with the surrounding wood are minimized. Color will vary depending on the product used, but it can be stained with blending powders to create a smooth transition. Whenever you use epoxy in wood bonding, however, remember that it does not interact with wood in the same way as does glue, tending to bond to the surface and rely on its own shear strength to stay in place. Wood movement may cause it to loosen.

I usually use Titebond and no clamping mechanism; I do fuss over the fit rather extensively, to the point that the shim can barely be removed from the crack after the final dry fitting. This yields a fairly fine glue line, minimizing the problem of aliphatic resin gumminess when sanding. I do plan to try the Garrett Wade gap-filling product. Product number on this is 202GF: ordering phone number is 1-800-221-2942 (stores catering to woodworkers usually carry this product).

I have had good results in using epoxy with some filler as a bonding agent for a wood shim. Bear in mind, however, that I am in a very stable climate with minimal humidity swings: in other parts of the country, epoxy may not fare well at all. None of my epoxy repairs is over eight years old — in piano terms, an experiment still in infancy. When I spoke to Wally Brooks (who now does very little shimming, preferring the more reliable and permanent repair of board replacement) he suggested water putty ("Rocky" is the common brand) and five-minute epoxy to fill in gaps around shims, if necessary. The quantity of epoxy is minimal, the water putty has some body of its own, and yields a good light color which blends well with spruce.

What about the nastier board repairs? These are the compression ridges and other areas of multiple cracks which jump grain, run very close together, etc. creating a spongy driftwood area in the board. These are difficult to repair so the appearance is actually improved. The first question may be: is it really a crack? Some soundboards are finished before the board is given sufficient time to relax and stabilize after the planks are glued together. This may create a raised area which resembles a crack but is really a bulge which can be eliminated by scraping and/or sanding.

In other instances, however, the fibers of wood have crushed. Often due to excessive humidity followed by ex-

treme dryness, these are the areas which can be the most troublesome.

It may be possible to select the most open crack for shimming and cosmetically repair the surrounding finer cracks with epoxy or simply by removing accumulated dirt and darkened finish and refinishing. These smaller cracks may very well open up later. It may be better or desirable to remove the entire section of board and install a new piece of spruce.

You may wish to practice installing a piece on a board sometime by working on an area which will be hidden by the plate. Most often, installing a piece is a four-way fit: the ends are wide enough so that any gap is very noticeable. Fitting so that the ends as well as the long sides mate is more challenging than installing a narrow, boat-ended shim.

You will need spruce, of course: well-seasoned, quarter sawn and of a color and grain width similar to the existing board. If you are near large lumberyards which will allow you to pick through stock, you may be able to find something suitable. Otherwise, it may be necessary to contact a soundboard maker or perhaps a technician who makes and installs boards. In addition to the factors mentioned above and the obvious length and width requirements, remember that a soundboard is tapered (usually) and will be thicker in the middle than at the edges: keep this in mind when selecting thickness. Dry the piece for sectioning as you would a shim.

Determine the area of board which needs to be replaced: use a straight edge and mark off both sides and the ends of the cut. Here again, if the piece ends in the middle of the board, I suggest replacing material all the way to the case or edge: it makes for a better looking repair. Fitting a piece in under a bridge strikes me as excessively difficult. Given the presence of ribs, case and other obstacles to work around, getting a single piece of wood in under the bridge is nearly impossible. I stop the piece at the bridge and start a new one on the other side if necessary.

Removing the old section can be accomplished by working laboriously with a handsaw or carefully with a router. The laminate trimmer style routers, having a smaller or sometimes offset base, will allow you to work more easily and closer to the bridges and case. However wood is removed, the more straight the line of the cut, the easier it will be to fit in the piece. (The easiest fit to accomplish is mating two straight surfaces). A fence or guide should be devised and clamped to the board using bar clamps and wooden blocks over the edge of the case.

This brings up the question of angled versus straight-sided cuts. Some technicians put a very slight angle in the cut (similar to but not as acute as a shim angle) and angle the new piece to match. Others make a straight-sided cut in the board (taking advantage of the precision of the router) but angle the edges of the piece very slightly. Perhaps the simplest is to make the cut and piece both straight sided, but this requires very precise cutting and fitting. Nick Gravagne says that he sometimes puts in a double piece: one large piece cut with one straight side and one angled like a shim, and a smaller piece which is an inverted version of the same shape. The two angled surfaces contact each other, wedging both pieces in place as they are driven in. The point to remember is that there must be solid contact with the ribs as well as the surfaces of the soundboard.

It is highly counterproductive to cut through ribs. If removal is done with a router, set the depth carefully (remembering the taper). Of all our shop tools the router is the one which commands the most respect; practice on scrap and plan out carefully what you intend to do when nearing the case, bridges, etc.

If removing the old section leaves you with a nice, straight surface for fitting, so much the better. If it has been done with a handsaw, check with a straight-edge and plane or shave wood to dress up the edges so they are straight, flush and splinter-free. The router blade or saw should just kiss the top surface of the ribs; remaining splinters should be cleaned up with a chisel to leave a good, clean gluing surface.

The new piece must first be cut to length and width so it can be placed in the aperture. If the piece overhangs the belly edge, length is easy: cut it too long, and trim it after the sides are fit. If the piece must run between the case and the bridge, it is a trickier matter. Hopefully, a very small gap at the case will be acceptable (one in the middle of the board or at the bridge is not). I work with a very slight angle in the sides of the piece and a straight sided cut-out in the board. If the piece ends at a bridge, it will usually come to an offset point: I "slope" the pointed end from bottom to top (similar to the boat-end but with a sharp angle rather than a curve) to help the fitting process. The cut-out is sloped to match. This offers a little support to the end of the piece, which may not rest on a rib.

I cut the piece just over dimension, and remove wood to get it to settle down into the space. Fitting is much the same as working in a shim. When the new piece is close enough to dimension to be laid on top of or in the aperture, press on it or look to see where contact is not being made. Mark those areas and remove wood from the high spots. Wood can be removed either from the piece or the board, but it is advisable to pick one or the other. If the piece is a good straight table saw cut, you may prefer to shape the board to fit it: on the other hand, it is a little easier to shave off the edge of the loose piece than it is to work on the edge of the cut in the board.

You must keep working and marking and shaving until the piece fits along all four edges *and* contacts the ribs. Shining a strong light on top of the board and looking up from underneath will reveal areas of poor fit. Check with a thin blade such as a palette knife to insure good rib contact.

Even with the best of fits, a gap-filing adhesive is advisable. Downward pressure is needed to clamp the new section to the ribs, so arrange go-bars or a beam. Dry fit everything carefully. If you have one tapered end, make a reference mark somewhere across the adjoining edges: the piece may tend to skate up the tapered end and not fit solidly down into the crack. Once glue has been introduced it becomes more difficult to see exactly what is happening along the edge.

When the shims and any pieces are glued in place, the board resembles a steeplechase course, with small fences and larger plateaus sticking up above the original surface. These must be trimmed and the board sanded and finished—and we'll get to that next month.

Speaking Of Next Month,

We'll have comments from Steinway regarding the recent series of articles and responses about the tail length/action geometry and center pinning/plate position questions which have been raised. ≡

TUNING UP

The Bass

Rick Baldassin
Tuning Editor

Continuing the correlation of material with Michael Travis' articles, this month we will discuss the bass. The discussion will include material condensed from the "On Pitch" series, references to the original articles, and a few other methods which have appeared in the *Journal* in the past few years.

The bass presents the tuner with an interesting set of opportunities and challenges. Opportunities because there are several types of octaves to choose from, and challenges because, in spite of our many choices, at times no combination will sound good. Let us look a moment at the menu of choices.

You may recall from last month that in the midrange, we primarily tune 4:2 type octaves, and that the aural tests for the 4:2 octave are the M3-M10 test, and the P4-P5 test. To tune the 4:2 octave electronically, set the tuner one octave above the upper note of the octave, stop the lights while playing one of the notes, then tune the other note.

In the bass, there are several octaves to choose from, but not all types work on every piano. We will discuss why in a moment. For now, let us look at the choices.

The 6:3 Octave

The most common type of octave used in the bass is the 6:3 octave. The aural tests for the 6:3 octave are the m3-M6 test (ex: D3-F3, F3-D4) and the P12-P5 test (ex: D3-A4, D4-A4). The m3-M6 test is most commonly used because the beat rates are faster and easier to hear. To tune the 6:3 octave electronically, set the tuner a P12th (octave + fifth) above the upper note of the octave, stop the lights while playing one of the notes, then tune the other note. For the above example, set the tuner on A5, play D4, stop the lights, then tune D3. Either aurally or electronically, the results are the same.

The 8:4 Octave

Another type of octave available in the bass is the 8:4 octave. The aural tests for the 8:4 octave are the m6-M3 test (ex: E1-C2, C2-E2) and the P11-P4 test (ex: E1-A2, E2-A2). The m6-M3 test is most commonly used because the beat rates are faster and easier to hear. These intervals in the low bass are difficult to hear anyway. Rather than playing the intervals, simply hold each interval's notes down, and "ghost" the beats by playing the "strike note" which for the 8:4 octave is two octaves above the upper note. For the above example, this would be E4. This should isolate the 8:4 level beats from everything else which is going on. To tune the 8:4 octave electronically, set the tuner two octaves above the upper note of the octave, stop the lights while playing one of the notes, then tune the other note. For the above example, set the tuner on E4 (which is also the strike note), play E2, stop the lights, then tune E1. You may have to pluck E1 to get a reading since many pianos are designed to strike at 1/8 the string length, therefore the eighth partial is not present when the note is struck.

The 10:5 Octave

Another type of octave available in the bass is the 10:5 octave. The aural test for the 10:5 octave are the M6-m3 (ex: F1- D2, D2-F2) and the A4-d5 test (ex: F1-B1, B1-F2). I can't say that either is more common. The M6-m3 test may be easier to remember. If you try to listen to these intervals, you will find that they are nearly impossible to hear. However, using the strike note makes the tests very useful, even the A4-d5 test. Follow the procedure for "ghosting" described above. The strike note for the 10:5 octave is a M17 (two octaves + M3) above the upper note. For the above example, this would be A4. Using the strike note should isolate the beats you want to hear from the rest. To tune the 10:5 octave electronically, set the tuner a M17 above the upper note of the octave, stop the lights while playing one of the notes, then tune the other note. For the above example, set the tuner on A4 (which is also the strike note), play F2, stop the lights, and tune F1. You should have no problem reading the 10th partial.

The 12:6 Octave

The final octave type we will discuss is the 12:6 octave. The aural tests for the 12:6 octave are the m10-m3 test (ex: A0-C2, A1-C2), and the P19-P12 test (ex: A0-E3, A1-E3). The faster beating m10-m3 test is probably easier to hear. On the other hand the 19th and 12th are important musical intervals in the bass. Again, these intervals are nearly impossible to hear. However, using the strike note makes the tests useful. Follow the procedure for "ghosting" described above. The strike note for the 12:6 octave is a P12 (two octaves + fifth) above the upper note. For the above example, this would be E4. Using the strike note should isolate the beats you want to hear from the rest. To tune the 12:6 octave electronically, set the tuner a P19 (two octaves + fifth) above the upper note of the octave, stop the lights while playing one of the notes, then tune the other note. For the above example, set the tuner on E4 (which is also the strike note), play A1, stop the lights, then tune A0.

The above material was condensed from the "On Pitch" series, number four, which appeared October 1983, pages 18-20. The original contains more detailed instructions on how to use the interval tests, as well as keyboard illustration, which make the tests easier to visualize.

If you can find a copy, it would be worth your time.

How to Choose

With so many choices, why is it that at times, we just can't make the octave sound right? One reason is that all of these different octave types are actually competing to be tuned beatless. Since only one type can be tuned beatless at a time, the rest will naturally be left beating. Sometimes, we hear several loud beats, while at other times we do not. This is because while all of the partials may be present, they do not all have the same loudness or amplitude.

Different types of octaves are tuned in particular areas of the piano for two primary reasons: first, different partials are louder than others in different areas of the piano, and second, varying the level of partial matching causes varying degrees of out-of-tuneness (beating) in neighboring pairs of partials. The tuner's job is to match the loudest set of partials, while at the same time minimizing beats in the neighboring sets.

All of the individual partials of a note together constitute what is known as the "tonal spectrum," and can be measured and displayed visually on a "spectrum analyzer."

In the "On Pitch" series, number seven (May 1984), I analyzed work which was done by physicist Harvey Fletcher and associates, which was published in *The Journal of the Acoustical Society of America* in June 1962. Fletcher had measured the tonal spectra of seven Cs on the piano hoping to be able to synthesize the tone. Not my subject, but it saved me having to read the notes, and I didn't have an analyzer.

The tonal spectrum for note C1 showed that there was virtually no fundamental or first partial present, a small amount of second partial, a substantial amount of third to sixth, 10th and 12th partials present. The spectrum for note C2 again showed a small amount of first partial, with the second to sixth partials predominating.

Considering the spectra for both C1 and C2, the pairs of partials with the greatest amplitudes were 6:3, 8:4, 10:5, and 12:6. This is one of the reasons we do not tune 2:1 octaves in the bass of the piano — the partial amplitudes are so small that our ear will not detect a beat. This allows us to match the higher partials which have greater amplitude.

The tonal spectrum for note C3 showed a fair amount of first partial, a small amount of second partial, a very large amount of third partial, and large amounts of fourth to seventh and 10th partials. Considering the spectra for both C2 and C3, the pairs of partials with the greatest amplitudes were 2:1 and 6:3. It will be shown later why 2:1 matching does not work well in this area and why 6:3 is most generally matched.

The tonal spectrum for note C4 showed large amounts of first to fourth partials. Considering the spectra for both C3 and C4, the pairs of partials with the greatest amplitudes were 2:1, 4:2, and 6:3. In the upper bass, the pairs most often matched are 4:2 and 6:3.

The above material was condensed from the "On Pitch" series which appeared May 1984, pages 30-31. The original contained graphs which illustrated the tonal spectra for the seven C's on the piano, which help to visualize the concepts discussed above. If you are able to, refer back to the original for further information.

Another factor affecting our choices is inharmonicity. In general, the lower the inharmonicity, the wider the octaves can be tuned. The length of the strings has a large influence on the amount of inharmonicity present. The longer the string, the lower the inharmonicity can be for a given note. There are several other factors which determine how much inharmonicity there is in a bass note, but no matter how well a string is designed, the shorter string will have a higher "minimum" inharmonicity.

Smaller pianos (with shorter strings) are more inharmonic (generally) than larger pianos (with longer strings). For this reason, the octave width is more restricted in tuning the smaller pianos.

In number eight of the "On Pitch" series, I tuned all of the C octaves on a concert grand piano as 2:1, 4:2, 6:3, etc., then measured the octave at all of the other partial levels, and calculated the beating present. The results were as follows:

Beats Per Second

Measured As:						
C1-C2	*2:1*	*4:2*	*6:3*	*8:4*	*10:5*	*12:6*
2:1	0.00	0.20	0.42	0.97	1.54	2.64
4:2	0.15	0.00	0.26	0.63	1.41	2.12
6:3	0.12	0.23	0.00	0.38	1.06	1.85
8:4	0.13	0.23	0.28	0.00	0.57	1.42
10:5	0.26	0.39	0.42	0.33	0.00	0.50
12:6	0.40	0.72	0.99	0.77	0.48	0.00

Measured As:						
C2-C3	*2:1*	*4:2*	*6:3*	*8:4*	*10:5*	*12:6*
2:1	0.00	0.54	0.81	1.33	1.71	2.31
4:2	0.09	0.00	0.09	0.27	0.88	1.40
6:3	0.11	0.12	0.00	0.15	0.69	1.22
8:4	0.14	0.18	0.20	0.00	0.69	1.27
10:5	0.26	0.38	0.52	0.45	0.00	0.45
12:6	0.30	0.53	0.68	0.79	0.50	0.00

Measured As:						
C3-C4	*2:1*	*4:2*	*6:3*	*8:4*	*10:5*	*12:6*
2:1	0.00	0.82	.09	1.87	3.27	5.60
4:2	0.09	0.00	0.00	0.91	2.05	3.53
6:3	0.18	0.00	0.00	0.48	1.52	2.71
8:4	0.35	0.27	0.41	0.00	1.22	2.53
10:5	0.59	0.70	1.00	0.79	0.00	1.18
12:6	0.65	1.09	1.54	1.63	0.91	0.00

The C1-C2 Octave

Looking at the chart for the C1-C2 octave, when this octave is tuned as a 10:5 octave, there is less than one-half beat per second in any of the neighboring pairs. Tuning as 12:6 results in less than one beat per second in any of the other partials. However, if this octave were tuned as a 6:3 octave, there would be beats of 1.06 at the 10:5 level, and 1.85 at the 12:6 level. From the tonal spectra, we see that both the 10:5 and 12:6 pairs have large amplitudes, so these beats would be very audible. In this case, the 10:5 would be the best choice, considering both amplitude of the partials and beating in the neighboring pairs. The 12:6 would be another good choice. This would create more of a "rumble" which some technicians find desirable. Remember, this was a large grand piano. Smaller pianos with shorter strings and therefore higher inharmonicity would more likely be tuned as 8:4 or 6:3. Pianos with really short strings might be forced back to 4:2 tuning, and the remaining beats at the 10:5 and 12:6 would have to be lived with.

The C2-C3 Octave

Looking at the chart for the C2-C3 octave, the 10:5 octave would again seem to be the best choice, with all beats being about a half beat per second, or less. However, the tonal spectra information showed that 2:1 and 6:3 were the loud pairs, not 10:5. Earlier, it was mentioned that it would be shown why 2:1 would not be a good choice in this region, although it is a loud pair. Notice that when the octave is tuned as a 2:1 that a beat of 0.81 results at the 6:3 level, which is also a loud pair. If the octave is tuned as a 6:3, there are only 0.11 beats per second at the 2:1 level. The 6:3 is therefore the better choice in this region. This is the case not only in large pianos, such as this, but in nearly all pianos.

The C3-C4 Octave

Looking at the chart for the C3-C4 octave, either the 4:2 or 6:3 would minimize beating. The tonal spectra information showed that 2:1, 4:2, and 6:3 are the loud pairs. Again, if the octave were tuned as a 2:1, this would result in 0.82 beats at the 4:2 level, and 1.09 beats per second at the 6:3 level. Since these beats would be audible, 2:1 would not be a good choice. Since tuning either 4:2 or 6:3 would result in less than 0.2 beats per second at the 2:1 level, either would be satisfactory in this case. Because the strings in this piano are very long, and the inharmonicity is very low, the result of tuning either a 4:2 or 6:3 octave would be nearly the same. In a smaller piano with shorter strings and higher inharmonicity, this would not be the case, and there would be a slight difference between 4:2 and 6:3 tuning.

So we see the task is to eliminate the loud beats as much as possible. In a concert grand, this is fairly easy, because the strings are long, and the inharmonicity is relatively low. This means that the actual difference in width between the 2:1 and 12:6 tunings is reasonably small, and a good compromise can be achieved. In a smaller piano, with shorter strings and higher inharmonicity, the actual difference in width is much greater, too great to achieve a good compromise. In a small piano, the C1-C2 octave might look more like the chart for the C3-C4 octave in this concert grand. In general, however, the same partials will be loud (except there will generally be less fundamental with the shorter string). Trying to find a good compromise with loud pairs of 6:3, 8:4, 10:5, and 12:6 looking at the chart for the C3-C4 octave (pretending it is the C1-C2 octave) is impossible. Tuned as 6:3, you have 3.5 beats at 12:6. Tuned as 8:4, you have 2.53 beats at 12:6, and now 0.41 beats at 6:3. Tuned as 10:5, you have reduced 12:6 to about one beat, but have increased 6:3 to one beat, and these are loud beats, believe me. There is no good solution. Generally, the fast, high beats are lived with in favor of the smoother sound with the absence of the lower beats.

The above was condensed from number eight of the "On Pitch" series which appeared in June 1984, 27-29. It contained both charts for the cent widths which were measured, as well as the charts for beats per second, for all of the "C" octaves on the piano.

Transition

As you can imagine, if there were a sudden change in octave type, this might disrupt the smooth progression of parallel intervals. All of the interval tests given above indicate that a certain type of octave is tuned when the test intervals are "equal beating." The same tests can be used to indicate that a certain type of octave is wide or narrow at that given level by using the tests in "unequal beating" fashion.

To make a smooth transition between 4:2 and 6:3 tuning, there should be a few notes that are wide of 4:2 and narrow of 6:3. The octave is wide of 4:2 (4:2+) when the M3<M10, and P4>P5, and the octave is narrow of 6:3 (6:3-) when the m3>M6, and the P12>P5.

To make a smooth transition between 6:3 and 8:4 tuning, there should be a few notes that are wide of 6:3 and narrow of 8:4. The octave is wide of 6:3 (6:3+) when the m3<M6, and P12<P5, and the octave is narrow of 8:4 (8:4-) when the m6>M3, and P11<P4.

To make a smooth transition between 8:4 and 10:5 tuning, there should be a few notes that are wide of 8:4 and narrow of 10:5. The octave is wide of 8:4 (8:4+) when the m6<M6, and P11>P4, and the octave is narrow of 10:5 (10:5-) when the M6<m3, and A4>d5.

To make a smooth transition between 10:5 and 12:6 tuning, there should be a few notes that are wide of 10:5 and narrow of 12:6. The octave is wide of 10:5 (10:5+) when the M6>m3, and A4<d5, and the octave is narrow of 12:6 (12:6-) when the m10>m3, and the P19>P12.

Here is a chart which summarizes the tests for the octave types:

4:2	M3=M10, P4=P5
4:2+	M3<M10, P4>P5
6:3-	m3>M6, P12>P5
6:3	m3=M6, P12=P5
6:3+	m3<M6, P12<P5
8:4-	m6>M3, P11<P4
8:4	m6=M3, P11=P4
8:4+	m6<M3, P11>P4
10:5-	M6<m3, A4>d5
10:5	M6=m3, A4=d5
10:5+	M6>m3, A4<d5
12:6-	m10>m3, P19>P12
12:6	m10=m3, P19=P12

The above material was condensed from number 10 of the "On Pitch" series which appeared in January 1985, pages 18-20. The original article contains graphic illustrations of these tests, and detailed instructions for each.

Other Tests

Michael Travis has done an excellent job in describing the other types of tests which verify that our octave choices

are correct, and our execution consistent. You may wish to supplement by reading number 11 of the "On Pitch" series which appeared March 1985, pages 19-21. It discusses interval tests such as parallel M10ths, M17ths, P12ths, P19ths, m14ths, and m21sts. Detailed instructions and examples are given for each.

Finally, this electronic procedure is one which has been taught by Dr. Sanderson. It was reviewed in the September 1987 issue, page 29. It involves using reference notes other than just the octave to determine the placement of the lower octave note. When tuning B2, set the machine on F#5 (sixth partial). Play as reference notes not only B3 (octave), but F#4 (twelfth), and F#5 (nineteenth) as well. The machine will read all three of these reference notes while on this one setting, and a good compromise can be achieved between octave (6:3), twelfth (6:2), and nineteenth (6:1). If you want, you can throw in the fifth F#3 (6:4) as well as a reference. This system allows you to compromise the relationships of 6:4, 6:3, 6:2, and 6:1. All of these are important musical intervals. To achieve this aurally, play the note being tuned along with the reference notes, and a common test note. For the above example, the test note would be D3 in each case, and would create test intervals as follows:

B2-D3 (m3), D3-F#3 (M3), D3-B3 (M6), D3-F#4 (M10), and D#-F#5 (M17). If a good compromise was reached between the fifth, octave, twelfth, and nineteenth, the progression of the m3, M3, M6, M10, and M17 will be good also.

Conclusion

The bass offers the tuner an interesting set of opportunities and challenges. Experience will teach the best choices. The above material and references should help the tuner know what options are available, and how to execute them. Be sure to read Michael Travis' article. Until next month, please send your questions and comments to:

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PRACTICALLY SPEAKING

Key Balance Hole Repair

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This month I would like to present a method of installing hardwood inserts to replace badly worn balance pin holes in keys. Although this job represents major surgery for keys, it is not really difficult if undertaken with the right equipment and in a step-by-step manner. The method presented here will serve to illustrate further applications of the drill press and the table mounted router, tools featured in the first two articles of this series. This project also gives us the opportunity to look at another useful shop skill: soldering.

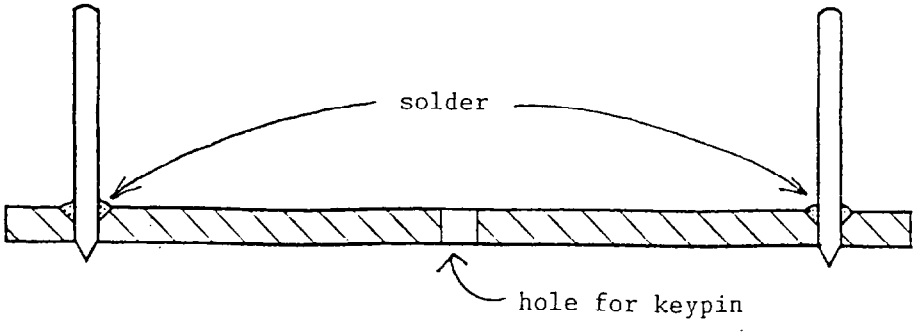
If balance holes are only slightly worn, they can usually be closed back up by glue sizing, as explained by Susan Graham in the October 1988 "Technical Forum." However, when the holes are extremely worn it is necessary to insert new wood, re-drilling the holes in the proper location. The problematic part of this job is that the new holes have to be accurately located in the key so that when placed back on the keyframe all keys line up both side-to-side and fore and aft. Locating the new holes is complicated by the fact that the balance rail pins in the keyframe usually do not lie in a straight line, so each key must have its hole drilled to match its own keypin location. In addition, when the original key holes are worn out they are of little use as locaters.

Of the methods I have heard for locating these new holes, my favorite is the use of a simple marking jig devised by Willis and David Snyder. Shown in figure 1, this jig consists of a piece of 3/32" or 1/8" mild steel flat stock approximately 1/2"x3", with a hole in the center equal in size to the balance rail pins in question. A pointed bridge pin is soldered into a hole in each end of the plate, with the point protruding about 1/16" above the surface. The long ends of the bridge pins are cut off flush with the underside of the plate. See the accompanying sidebar article for instructions on drilling and soldering.

Figure 1: Making Your Marking Jig

Materials needed:
- One piece of mild steel flat stock, approx. 1/2" x 3", 3/32" to 1/8" thick (from welding shop or just cut up an L-bracket from the hardware store).
- Two pointed bridge pins, size not important.
- Solid wire solder and soldering liquid (also called tinning fluid), and a propane torch.

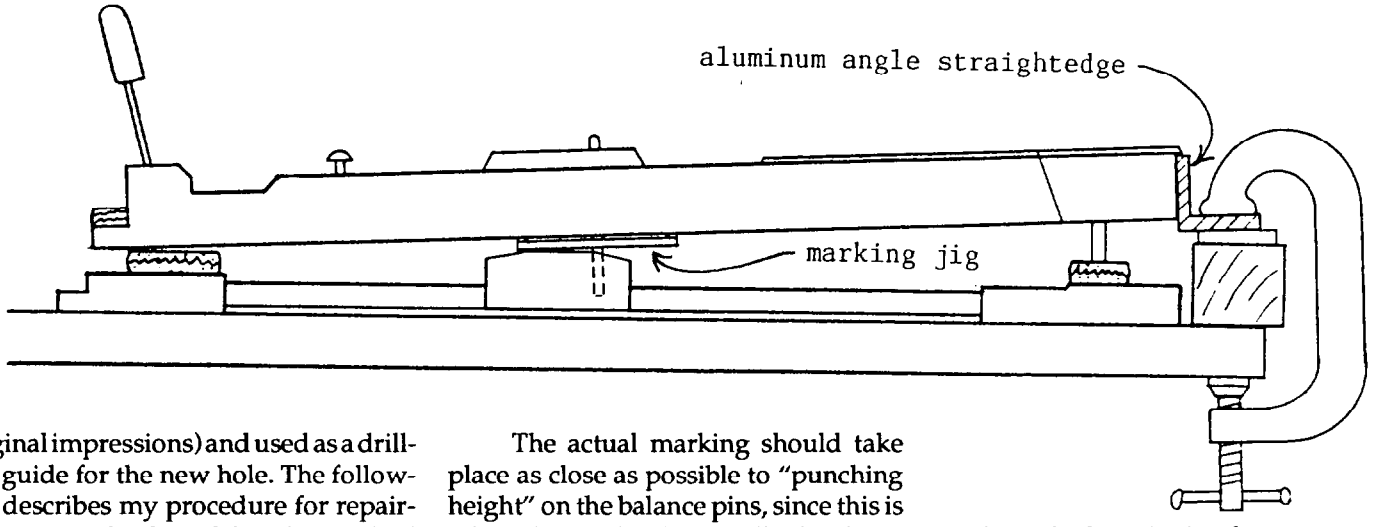
Procedure:
1. Grind one end of flat stock round, or otherwise make some mark to identify one end.
2. Centerpunch once near each end and once in the center. (Holes do not have to be exactly in line, just be sure to always point the same end forward when in use.)
3. Drill center hole to fit keypins freely; drill end holes for snug fit of bridge pins. (Normally oil would be used when drilling steel, but avoid it here since it will interfere with soldering.)
4. Countersink end holes on one side of plate only.
5. Drive pointed bridge pins into end holes just until points protrude 1/16".
6. Hold jig points-side down in vice for soldering. Too much other metal in contact with part to be soldered can act as a heat sink, making it hard to get jig hot enough for solder to flow easily, so only grip jig in the very corner of vise jaws.
7. Apply one drop of soldering liquid to the base of each bridge pin.
8. Heat jig with propane torch, directing flame to center of jig (directing flame on areas to be soldered can oxidize the metal, hindering solder bond).
9. When the soldering liquid bubbles, touch end of solder to base of bridge pins. Solder should melt and flow around pins, filling camfered area.
10. Let jig cool undisturbed, then cut excess bridge pin off flush and file smooth.



Overview Of Procedure

This marking jig is put on the balance rail pin (points upward) in place of the felt punching, and the key is then placed on the balance pin. With the front end of the key aligned to a straightedge, the key is pushed down firmly, causing the bridge pin points to make two impressions about 2 1/2" apart on the underside of the key. A router is then used to cut out the damaged balance hole area, a new piece of wood is glued in, and the marking jig is placed back on the key (positioned with its points in the

Figure 2: Marking the keys



original impressions) and used as a drilling guide for the new hole. The following describes my procedure for repairing an entire keyboard, but this method is equally practical for repair of just a few keys.

Using The Marking Jig

When the original balance holes are badly worn, the keys' original positions on the frame are unknown. However, there are usually some keys near the extremes of the keyboard which are in good enough condition to define the original straight line of the key fronts. Locate at least one such key near each end of the keyboard to serve as a sample and (with the keyframe clamped to the bench top) set up a rigid straightedge against these samples. I use a one-inch by one-inch by five-foot piece of aluminum angle supported by wood blocks and clamped to the bench top as shown in figure 2. When setting up the straightedge, build up the balance rail punchings of the sample keys to equal the thickness of the marking jig. The height of the straightedge should be such that when the key lip rests on it, the key is at or above its normal key height, but not so high that the front pin is no longer into its bushing. The reason for this is as follows: A more accurate marking job will be done if the pin is perpendicular to the key, rather than angling through the key, when the points are pressed into the key. (If the key is pushed down an angled pin as the marks are made, it will be moving forward as it moves down onto the points, leaving slightly elongated point impressions.) Since most balance pins are angled back somewhat, holding the key in its "up" position puts it in a more perpendicular orientation to the pin.

The actual marking should take place as close as possible to "punching height" on the balance pins, since this is where the new key holes will ride. Therefore the marking jig should be no thicker than necessary, and all paper felt punchings should be removed from the pins prior to marking.

Side-to-side alignment and squaring of the key during marking is accomplished by resting the underside of each key lip squarely on the straightedge. If key bushings are worn, they should be replaced so the tops of the keys are held properly spaced while marking. Obviously the straightedge should be supported at the same height at each end so it is level with the bench top.

Once the straightedge is set up, marking the keys is simply a matter of placing the jig down over each pin, aligning the corresponding key to the straightedge, and pressing down firmly. Be sure to note which end of the jig you point toward the key fronts when marking so you can position it the same way later on when using it for a drilling guide. Once all the naturals are marked, the straightedge must be relocated and the same process followed for the sharps.

Prepairing New Wood For Inserts

Most piano keys are made of sugar

Figure 3: Making inserts

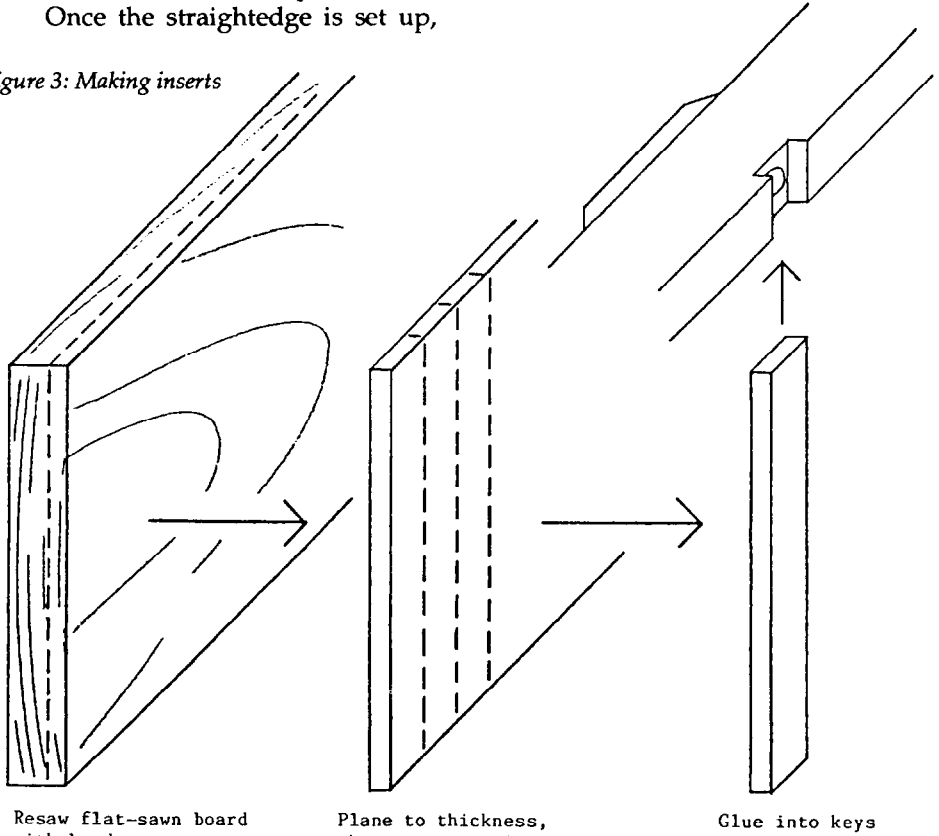
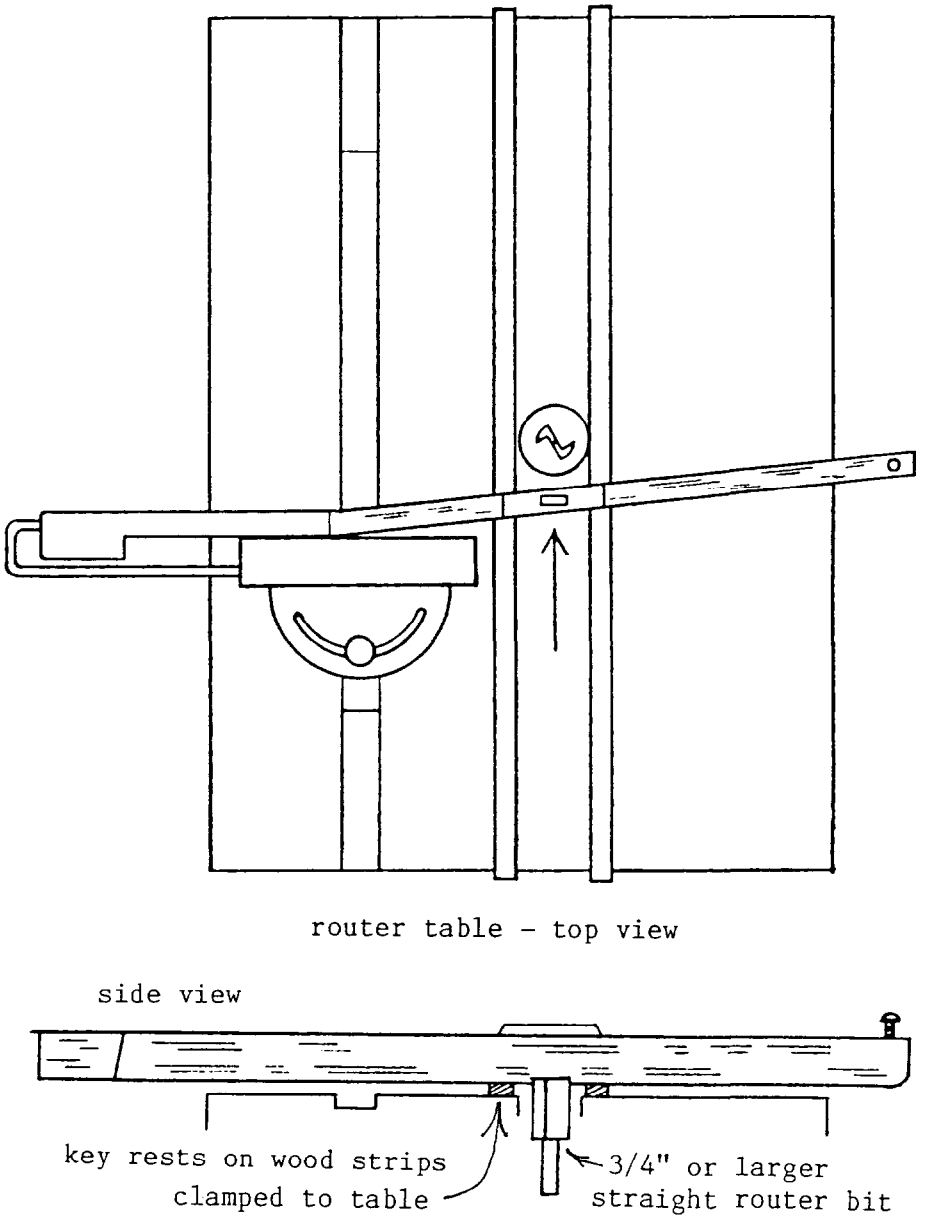


Figure 4: Routing slots for inserts



pine or basswood, and original key shoes or plates are usually of similar softer woods. I'm not sure why very hard woods such as maple are not used here; perhaps someone else can contribute an answer. Possible disadvantages of maple might be noise if looseness should develop and more difficulty in easing to fit. Although I have used maple inserts with good success, it seems wise to follow the practice of quality piano manufacturers and go with something softer. Basswood is excellent to work with because of its uniformity. David Snyder tells me that he is currently using poplar; this sounds like a good choice since it is also even-grained, but is somewhat harder than basswood and might be more durable.

Original balance hole sections usually measure 1/8" to 5/32" in thickness. Wood of this thickness can be obtained by resawing with a bandsaw and planing smooth; alternatively, basswood is available from hobby shops in 1/8" thick boards. The thin wood then has to be cut cross-grain into strips as wide as the intended insert. I cut mine 3/4" wide to match the recess cut by a 3/4" straight router bit. A 1/4" or 3/8" long recess and insert could be used, but this would just about line up with the mortise hole that goes most of the way through the key, leaving this area weaker than it already is. A 3/4" insert spans over the mortise cavity, lending some reinforcement to the area. Figure 3 shows the steps involved in sawing up wood for inserts to end up with a flat-sawn, fore and aft grain orientation matching that of the key wood.

Routing Out For Inserts

A table-mounted router works well here, set up as shown in figure 4. The bottom surfaces of keys are not always flat; when laid on a table there is sometimes a gap under the balance hole area. Therefore in order to ensure that each recess is cut to the same depth (so each insert fits flush to the bottom of the key), the keys should slide on thin strips of wood placed to each side of the router bit, rather than on the table surface itself. The height of the router bit is then set to be one insert's thickness above the wood strips. A miter gauge (modified by the addition of a block of wood if necessary) is used to orient the head of each key perpendicular to the cutting path. Centering of each balance hole over the router bit can be done with a fence to guide the front end of each key, or if the keys hang over the table top, with an outrigger coming off the miter gauge as shown.

Each key should be backed up with a block of soft scrap wood while cutting, to prevent chipping of the key wood as the router bit exits. Turn the block to a new edge for each key. Either carbide tipped or high-speed steel bits work well in soft wood. However, both types will cut noticeably smoother if sharpened before use. Router bits dull with use, but even new bits can often benefit from an initial sharpening. The diamond grit-coated paddles work well here, used to lap the inner facets of the cutting edges, *never* the outer circumference.

Installing The Inserts

The inserts should be glued in place by coating both key and insert lightly and clamping. Avoid too much glue squeeze-out inside the mortises. Light clamping pressure from spring clamps or go-bars is adequate. After a few minutes of clamping, the tail end of the insert can be cut off and glued into the next key. When all have been glued in, the inserts can be trimmed flush with a small plane or chisel and the bottom key surfaces lightly sanded.

Re-drilling The Balance Holes

Test drill some scrap insert material to determine the correct size drill for the given keypins. Usually a drill .001" to .002" larger than the pin will make a

hole that's just slightly snug, ready to be eased to fit. Tilt the drill press table so the drill bit matches the angle (if any) of the keypin to the key at the time of marking. Support the keys with two scraps of wood so the capstans and backchecks do not touch the table top. With a key upside-down on the drill press table, position the marking jig points back into their impressions on the key. (Be sure to put the same end of the jig toward the front of the key as you did when marking them in the first place.) Holding the jig firmly in place, drill down through its center hole and through the new insert. Eventually the hole in the jig will become enlarged, reducing accuracy; this can be corrected by placing it on an anvil and peening around the hole with a hammer and a straight punch.

Fitting The New Balance Holes To The Keypins

The new holes will need to be made slightly hour-glass shaped in cross-section, in order to allow the keys to pivot freely. Start by chamfering the bottom side of all the holes just slightly using a counter-sink bit in an electric drill. Next file the front and back sides of the top (inside the key) ends of the holes slightly. Realize that for a key to pivot there must be clearance behind and in front of the key pin in the top half of the hole, but that to avoid a "pully" key the hole must remain round in its lower half. To allow filing a specific area in the hole without damaging the rest of it, use a 1/8" round file that has been ground smooth 2/3 of the way around. Reach in through the bottom of the key, angling the file handle toward the key front, and bevel the top rear edge of the hole. Angle the file the opposite way and bevel the top front edge of the hole. A compressing tool such as the Yamaha "CF" tool can be used to do the final fitting. Each key will have to be individually adjusted for correct fit. Test them on the key frame with balance rail punchings installed but without front rail punchings. This will allow you to see that the keys can pivot *farther* than necessary, thereby guaranteeing free movement. The "round" part of the hole should remain just slightly snug on the pin; I like the key to barely slide down the pin under its own weight. If you find that you have over-eased a key and it is slightly "pully," just breathe through the balance hole a couple of times; brand-new wood will usually tighten back up immediately with a slight introduction of moisture.

After fitting all keys back to the frame you should find a very even line of key fronts. Minor discrepancies can be adjusted by bending the balance pins slightly fore and aft. The most effective way to do this is to remove the key and tap horizontally near the base of the keypin with a hammer and wooden dowel. The usual key squaring, spacing and leveling will complete the job.

Conclusion

This job, like much rebuilding work, is somewhat time consuming and therefore not always worth doing on lesser quality instruments. We sometimes hear experienced rebuilders assert that no-name grands and old uprights are never worth rebuilding. I would like to express a slightly different point of view: that rebuilding of such pianos can be the best way for one to learn and perfect new skills without risking damage to quality instruments. Since most of us learn by doing, it is better that we make our mistakes on less-than-great pianos (preferably our own). The fact that a certain job is not worth doing on an instrument should not prevent us from doing it just for the experience. At the same time, however, we must realize there is a limit to how far we can advance if we only work on mediocre pianos. Just as a cheap spinet will limit the advancement of a piano student, it will likewise limit our mastery of piano service.

Next month I'll discuss damper felt replacement in vertical pianos, and how to re-design existing dampers to reduce after-ring.

At Large

A Case Of Poor Upper-Bass Tone Quality

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Seattle Chapter

Recently, a new client asked if I would tune and do other work on a 60-year-old Steinway she had just purchased. As I sat at the keyboard checking the piano, I noticed two very unusual things: first, there was a peculiarly weak, nasal tone quality in the upper bass. Second, I could see from the keyboard that the upper end of the bass bridge had been altered. Someone had built up the bridge cap about an eighth of an inch, but only where the strings of the top three notes crossed over the bridge. Getting up and moving around the piano to examine the situation more closely, I found that someone had also bored a hole, perhaps an inch and a half in diameter, through the bass bridge apron at the upper end. The workmanship was meticulous. Why, I wondered, would a rebuilder do this to a piano only to have it result in such a deplorable tonal condition?

As I searched the piano for clues, my mind went back to an experience I had some 10 years earlier while working for a piano dealer. I was "prepping" a new seven-foot Mason & Hamlin which seemed to have a very big and pleasing tone except in one spot: the upper bass. The top half-dozen or so notes in the bass section exhibited a weak, pinched, nasal quality which was quite obvious and annoying. Since I was accustomed to doing a fair amount of voicing on these pianos as part of the "prep," and since I had recently taught a voicing class at the California State Convention, I guess I was kind of "feeling my oats" about voicing. Consequently, I automatically assumed that what this piano had was a voicing problem.

Of course, following good tone regulation practice, I didn't start by needling or lacquering. I really had a feeling that it might be a striking point problem or a string-leveling problem, or even a string-termination problem. I set to work seating and leveling the strings and experimenting with the striking point. By moving the bass end of the action in about a quarter of an inch, I seemed to get an improvement in tone quality and checking against another piano of the same make and model, I found that the new striking point I had selected was indeed the same as on the other piano. Aha! I thought triumphantly. I've solved the problem as simply as that!

After taking a break, I came back and tried the bass section again with fresh ears, and it was obvious that the problem was still there, so not being eager to make the alterations which would be necessary to change the striking point by that much anyway, I decided to try some other solutions.

One of the solutions I tried was my favorite acetone and sanding sealer solution. Another was hammer filing. Another was needling. I tried various permutations and combinations of these tried-and-true tone regulating procedures, all to no avail.

After about three sessions with this implacably recalcitrant piano, I was thoroughly and devastatingly humbled. It seemed, I thought, that there must be a simple reason for this obvious tonal defect, but I just couldn't see it. I must confess that I even resorted to silent but very earnest prayer! I decided to give the piano one more quick examination, and so I looked at everything from the bottom to the top. As I was finishing, my eye fell suddenly on the upper end of the bass bridge, which was firmly in contact with the side of the plate strut. I think I let out a loud noise of some kind at that point, knowing that this had to be it!

I thought briefly about the best way to separate the bridge from the plate. Spying the keyhole saw in my large case, I remembered that it was fitted with a hacksaw blade, which meant that a) the teeth were very small and would leave fairly unobtrusive marks, and b) it would cut both the hard maple of the bridge and the gray iron of the plate. I grabbed the tool and spent all of a minute or so sawing between plate and bridge, and observed that there was now a clearance of about a sixteenth of an inch between the two. Fairly running around the piano to the keyboard, I played the top octave of the bass. The problem was solved!

So now, as I stood looking over the strangely-customized bass bridge of the old Steinway, I glanced at the upper end of the bridge and sure enough, it was firmly in contact with the plate. Slowly, the pieces of the puzzle began to fall together. It was hard to say whether the piano had come out of the (Hamburg) factory with the bass bridge touching the plate, or whether the rebuilder had tried shifting the plate position to alter side-bearing, but at some point the rebuilder had noticed the poor tone quality in the top of the bass, and, assuming there was a downbearing problem, had decided to increase the downbearing by building up the bridge cap. Either at the same time or after stringing the bass and finding there was no improvement, the mystery rebuilder bored the hole in the bridge apron, probably with intent to reduce the mass of that part of the resonating system, thereby strengthening the attack of those upper notes. Of course, the rebuilder failed to notice the real cause of the tonal problem, namely, the end of the bridge butting against the plate.

The reason that good tone is impossible when a bridge is solidly in contact with the plate is that such a condition greatly impedes the soundboard's ability to respond to the string vibrations, especially in the immediate

area. The rebuilder's decision to add downbearing — in spite of the fact that my measurements showed more than enough bearing on the rest of the bass bridge to begin with — was questionable, to put it mildly. Adding downbearing when there is already sufficient bearing — and the bass requires very little — will simply add impedence and deaden the tone. The anonymous rebuilder was working in a more correct direction when attempting to lighten the bridge by boring a hole in the apron.

After I freed the bridge from the soundboard by cutting between them with my keyhole-hacksaw (the same one from ten years before!), the problem was solved on the Steinway just as it had been on the Mason & Hamlin. The tone appeared to be quite even and beautiful, meaning that the rebuilder's two "remedies" were in fact canceling each other out: the impedence added by too much downbearing was being mitigated by the large hole in the bridge apron. Although the piano sounds fine now, my recommendation to the client was that, as soon as possible, the hole should be plugged and the extra height on the bridge removed. My reason for this recommendation — besides just wanting things to look "right" again, was that the extra height on the bridge was added only in the area between the bridge pins, and the extra long bridge pins which had been installed were still coming out of the original holes. With the strings exerting side bearing an eighth of an inch up on the pins instead of where the pins enter the wood, and the additional leverage adding to the sidebearing, the risk of splitting out the original bridge is greatly increased.

What morals can one formulate from experiences like these? Considering my earlier experience with the Mason & Hamlin, and my assumption that it was a voicing problem, I think two factors were involved. First, although I had done a fair amount of voicing, and was pretty competent in "normal" voicing situations, I misread the symptoms. I think I would have to chalk that up to my lack of experience at the time. We are all inexperienced, just in different areas and to different degrees. Second, I think many of us have a tendency to try to handle a piano problem by the latest method we have mastered or with the latest tool we have acquired. Sometimes we try to fit either techniques or tools into situations where they are not the right answer, but they're on our mind and in our toolbox, so we eagerly put them to use!

I think the unknown rebuilder of the Steinway may have suffered from both of the maladies just listed. In addition, it may be that there was a third factor at play. A good friend of mine, who happens to be a graphic designer, once advised me that in design it is usually advisable to employ the KISS rule: "Keep It Simple, Stupid!" I have since reflected that such a rule might apply equally well to many facets of life and work. I submit that in troubleshooting pianos one should look for the simplest explanation first. Rather than looking for obscure reasons or heroic solutions, we should look for simple, logical — even if unusual — answers. For example, knowing that Steinway has long been known to have a fairly solid and workable design, why would one feel compelled to make downbearing changes when adequate downbearing already exists, and to bore a hole in the bridge apron when countless Steinways of that make and model exist and sound fine without any need for such heroics? It's not a design problem, it's a problem of how the design was carried out!

Of the three factors identified here, namely a) inexperience, b) using a tool or technique mostly because it's fresh in our minds, and c) suspecting illogical or complicated solutions before seeking simple and logical ones, inexperience is something we are more or less stuck with, and which can diminish only very gradually. The process can be hastened, however, by attending seminars, conventions, and chapter meetings whenever possible, and by patient study of the *Journal* and sources of published piano technology, as well as by consulting with more experienced colleagues when faced with new problems. The other two factors are attitudes we can be aware of right away and improve upon more quickly. If we do concentrate on these issues, the quality of the experiences we have in piano work will increase greatly, as will the pleasure we take in doing our job.

Learning To Pass The PTG Tuning Exam Part VI: Bass

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

Working efficiently while tuning a piano sometimes requires a pre-tuning or pitch-adjustment stage prior to fine tuning. It is a waste of time to listen too critically when the pitch of the instrument is so far from A440 that tuning one section to pitch throws another section off. Experience has shown that in such cases it is more efficient to "get the piano in tune" before tuning it. A similar approach can also be advantageous while working under the time constraints of the tuning exam, in that you do get to all the notes at least once rather than working slowly and carefully and not finishing.

Here we are not concerned with a pitch stability problem so much, since the standard detuning for an exam should not result in a net imbalance of tension in the scale after tuning one section. For example, you could reasonably expect to be able to fine-tune the midrange (octaves three to four) before even one pass up the treble or down the bass on an exam piano and have it stay more or less stable while you complete your tuning.

The main point is that however you tune for the exam, you need to work efficiently and budget your time. The advantage to a fast pre-tuning followed by fine tuning is that you do get to all the notes at least once. If you run out of time, let it happen while you are doing your final overall nitpicking rather than letting the clock catch you desperately trying to whiz through some of those notes at the ends of the keyboard. The detuning leaves all notes substantially out of tune and the penalty points will rack up quickly if you don't finish.

In my previous article, I suggested you budget up to 45 minutes of the total allowed aural tuning time of 90 minutes for aurally tuning the midrange; this would leave you at least another 45 minutes for aurally tuning the rest of the piano. You could subdivide this 45 minutes and also budget time for bass tuning (octaves one through two) and treble tuning (octaves five through six, and seven) according to personal preferences and/or abilities. For example, you could allow 10 minutes for bass tuning, 20 minutes for treble tuning, and 15 minutes to recheck everything. Practicing ahead of time will give you an idea of how long each section takes for you to tune, and your time budget may look different.

If you use a visual-display tuning aid for part one of your exam you must aurally tune the midrange within the 45 minute time limit for part two (for you this is not merely a time-budgeting suggestion), but should also budget your 60 minute time limit for VDTA tuning in part one as seems necessary. Make sure you can stay within the time limits by practicing ahead of time under conditions which simulate an exam, making an honest effort to do your absolute best work, and noting how long it takes you to tune each section.

For this and the subsequent two articles, the focus of the discussion will continue to be aural tuning, though I will try to offer some ideas for VDTA users as well.

Leaving the Midrange

Last time we reviewed a number of aural "tools" useful for tuning and checking the temperament and midrange, having established the following criteria for the temperament: A4 is at A440; the octave notes of the temperament sound clean and pure together; parallel P5ths all sound consonant, about the same, and are all slightly contracted; parallel P4ths all sound consonant, about the same and are all slightly expanded; P5ths are slower beating than P4ths with either a common top or bottom note; pairs of contiguous M3rds beat in an ascending 4:5 bps ratio; parallel chromatic M6ths and M3rds show smoothly changing beat rates; all notes are stabilized so they won't require retuning later.

Among the basic midrange tuning checks reviewed, we looked at octaves (third-10th test); P5ths (sixth-10th test); P4ths (third-sixth test); M3rds (parallel and contiguous M3 tests); M10ths (parallel and M3-related contiguous tests); and M6ths (parallel and outside sixth-inside third tests). Before leaving the midrange I'd like to belatedly mention 12ths, as well as a major tonic chord test I use, some double octave tests, and a workhorse test for bass tuning, the m3-M6 test for the 6:3 octave.

The Twelfths

The 12th (octave-fifth), or P12 is the widest consonant interval in the exam's midrange C3-B4, and should definitely be in your midrange testing repertoire, though I forgot to mention it last month. Parallel P12ths should all sound similar and about as clean as the octaves. In the midrange, P12ths may be pure to slightly expanded starting around F2 (depending on the piano's inharmonicity), to nearly pure as the top note gets into octave five. Tempering of the P12 is indicated by the M6-M17 test (sixth-17th test). Example: with the M6, G2-E3 beating on the wide side of pure, test the P12, E3-B4 by comparing the M6, G2-E3 to the M17, G2-B4. Identical beat rates in the 6th-17th test indicate a pure P12, with matched 3:1 coincident partials. If the M6 is faster, the P12 is contracted, and if the M6 is slower, the P12 is expanded at the 3:1 level. Pure P12ths make a good transition between nearly pure 4:2 octaves in the fifth octave and the more nearly pure 2:1 octaves in the upper sixth octave, and may also be quite useful over the transition between treble and bass.

The Major Tonic Chords

Another midrange test I like to use is to play a chromatic parallel series of

major tonic chords, M3 doubled, listening carefully for irregular beats. All the chords of this series should sound similar; indeed, this is one way to define equal temperament: all the key signatures sound the same. If you haven't quite got it, they won't! Play C3-E3-G3-C4-E4, sustain, pause and listen, move all fingers one chromatic step up, play C#3-F3-G#3-C#4-F4, sustain, pause and listen, etc. through G3-B3-D4-G4-B4. You will quickly pick up imperfections especially in octaves, P5ths and P4ths, which are not too hard to isolate to the problem intervals. Then you can play contiguous M3rds and/or P4ths on both ends of the problem interval to see what you might want to change. This test works best as a final check before leaving the midrange. I find it's also somewhat relaxing and rewarding to play these chords and hear the pleasing sonorities which are the result of testing, tuning and retesting all the component intervals.

The Double Octaves

There are no double octaves in the midrange of the exam, but these are important intervals and should not be neglected.

Hint #18: It may be to your advantage before leaving the midrange to expand the range of intensive midrange checking down to F2 and up at least one note to C5, which will give you a series of double octaves F2-F4 through C3-C5, more notes to check the ends of the exam midrange with, and a head start on bass tuning.

Double octaves should sound nearly as clean as single octaves, and should not be beating more than one bps, and preferably less. Sometimes you will get a conflict between the purity of a double octave and a "wow" in the Pfifths to the inside of its ends, up from its lower member in the second octave and down from its upper member in the fourth octave. You need to resolve this conflict if present before shifting gears again for bass tuning, and this can involve an adjustment in double octave or P5 notes of either end. Tempering of the double octave is indicated by the M3-M17 (third-17th) test. Example: check B2-B4 by playing the M3, G2-B2 (beating on the wide side of pure) and the M17, G2-B4. The M17 should beat slightly faster than the M3, but no more than about one bps, indicating at this point in the scale about a four cent wide double octave at the 4:1 coincident partials.

Some pianos won't let you have a double octave that wide (at least, you may not like it!) and a fair amount of juggling can happen as you search for the best-sounding compromise. This is unfortunately not too unusual at the tenor-bass break where there may be a jump in inharmonicity complicating your task. To make this search more efficient, other tests are needed, such as the outside sixth-inside third test, described below.

In addition, the in-between pair of conjunctive octaves should fit in nicely; in checking the double octave B2-B4, also play the single octaves, B2-B3 and B3-B4, both separately and then all three notes at once. The octave test for this relationship is the M3-M10-M17 (third-10th-17th) test, which is a combination of three tests: the M3-M10 single octave test (indicates 4:2 partials), the M10-M17 single octave test (indicates 2:1 partials) and the M3-M17 double octave test described above. Example: test the B2-B3-B4 relationship by playing the M3, G2-B2 (beating on the wide side of pure), the M10, G2-B3, and the M17, G2-B4. You should hear a progression in beat rate over this range, with the M10 about 1/2 bps faster than the M3 (indicating a slightly wide 4:2 octave, B2-B3), and the M17 about 1/2 bps faster than the M10 (indicating a slightly wide 2:1 octave, B3- B4). Another way to think of this is that across the midrange, the M10 should be roughly intermediate in beat rate between the M3 and the M17 when the double octave sounds acceptable (one bps or less). This is an especially helpful test in treble tuning, and I'll talk about its application in the treble next month.

Also available with our expanded midrange is a mini-series of parallel M17ths, which should progress nicely, F2-A4, F#2-A#4, G2-B4, and G#2-C5. Parallel M17s will become more important as you move further from the midrange, since they help connect the ends of the keyboard with the middle and broaden the embrace of your temperament on the piano. This reminds me of a technical given by Carlos Ralon, RTT and past president of the DC Chapter (you saw him if you attended the 25th Anniversary Convention in DC in 1982, when he was host chapter president). Carlos told us that wherever he traveled in life, he never failed to think of his home, and drew this analogy to piano tuning I've never forgotten: wherever you are on the keyboard, always try to relate it to your most accurately tuned "home" octaves in the middle. The double octave, M17, double octave fifth (P19), double octave minor seventh (m21) and M24 (triple octave M3) are the wider intervals I seldom use without thinking of Carlos' homily.

The Minor Third-Major Sixth Test — Workhorse Of The Bass

This is the familiar single octave test for the 6:3 pair of coincident partials, which is a good place to start in tuning the low tenor and bass of many if not most pianos. Example: test B2-B3 by comparing beat speeds of the m3, B2-D2 and the M6, D2- B3. Equal-beating test intervals means that the 6:3 partials are matched; a faster m3 means the octave is contracted at the 6:3 level, and a slower m3 means it's expanded.

The reason this test is good is that the 6:3 pair is usually a relatively loud pair of octave partials in the bass, occurring at the P12 above the upper note of the octave. On many pianos, these partials are loud enough that you can easily pick them out of the air by just playing the octave, focusing your ear if necessary by momentarily striking the P12 above the upper member while sustaining the octave. That is one efficient way to quickly and fairly accurately tune the bass on most pianos. To a casual observer, this might look like you're just playing single octaves and tuning without doing any checking. Obviously, the ability to aurally tune fast and accurately without a lot of elaborate checking is a skill worth cultivating for efficiency in your daily work as well as in the tuning exam, as we'll soon see.

The human brain is a marvelous computer with massively parallel processing that can do quite a lot with a seemingly small amount of data input. If you take advantage of this, and properly train your brain to make the proper correlations through study and diligent practice, with experience you will find that simple intervals consistently applied will take you far toward accurate tuning. It does get easier.

On larger grands, the lower octaves sound better if they are a little wide of a 6:3, and on some smaller upright pianos, the upper bass octaves can be more nearly 4:2 octaves, gradually getting as wide as 6:3 near the bottom. Let your ear be your guide to octave size. Use the m3-M6 test as long as it gives you good results, but don't make it an absolute. You may begin using it in the low treble and over the break into

the bass, but after tuning a few of the bass notes check other intervals to make sure the m3-M6 test is giving you what you want, and recheck every few notes as you go down.

The Bass In The PTG Tuning Exam

The bass in the exam is the fourth scored category after pitch, temperament and midrange, and in its domain are the 24 notes of octaves one and two from C1 to B2. We don't require you to tune any notes lower than C1, which means that "0th" octave notes A0, A#0 and B0, are "freebies." I will depart slightly from my previous advice on practicing for the exam by urging you not to simulate this particular exam situation ahead of time on your customers' pianos!

Scoring tolerances in the bass are six cents per penalty point in octave one, and three cents per point in octave two. This compares with the significantly tighter tolerance of one cent per point through the midrange octaves three and four. The wider tolerances allowed do not mean that the bass is necessarily an easier section to pass, though you can get away with mistakes in the bass that you couldn't get away with in the midrange. The problem is, you tend to make more mistakes. As with all the other sections, you have to get 80 percent here, and the exam is designed so that the bass is about as easy to fail as any other section. My suggestions are the same: tune all the notes at least once, fine tune on the second pass, and double check the fine tuning as time permits.

First Pass Bass

Fine tuning the bass during an exam may be efficiently done in two stages, one quick one and the other more nitpicking. First, the "coarse" tuning: tune from the midrange down to about C2 by playing single octaves, the note you're tuning plus the octave above, and using a simple P5/P4 comparison check for reasonable accuracy. Go for the best sounding single octave, beatless to slightly rolling on the flat or wide side of pure. In octaves three and two, balance the P5 and P4 beat rate so they're approximately the same; the P5 should ideally be a little smoother, but at least not faster-beating than the P4. Don't bother much with the faster-beating intervals at this stage, except perhaps for the M6ths or M3rds, played a few at a time parallel. Do not get involved with extensive checking on the first pass; just go for reasonable accuracy, and try to keep your time down to 10 seconds per note.

A note on the P5/P4 comparison test: the rule of thumb here is that from a common note, the P5 should not sound rougher than the P4 when both are played either up or down. For example, if the P5, G2-D3 sounds worse than the P4, G2-C3, it's a good bet that G2 should be lowered a titch to get the best overall single octave, P5 and P4 up from G2. (You can apply the sixth-10th test for the P5 if you like, but it's redundant and therefore not needed because the more-pure P4 already told you that the P5 is very likely too contracted.) If the reverse is true, and G2-D3 sounds good (too good?) compared to G2-C3, it's possible that G2 needs to come up, though many fine tuners will not object to a little more roll in a bass P4 than a midrange P4, so long as it's justified by better-sounding P5s, P12s and P19s, and you're not overdoing your octave stretch.

Example, octave two: Tune B2-B3, just flat of pure, play and listen for balanced beat rate in P5/P4 test, B2-F#3/B2-E3, slightly favoring purity in the P5. Optionally, check a string of two to three parallel M6ths down to B2: play chromatic parallel M6ths, C#3-A#3, C3-A3 and B2-G#3, or whole-tone parallel M6ths, D#3-C4, C#3-A#3 and B2-G#3, and listen for a smooth progression in beat rate.

When the P5/P4 comparison test gets too muddy to hear easily, just use single octaves down to C1, tuning for the best sound. It helps if you need to focus your ear on the 6:3 pair of partials as described previously to strike a P12 above the upper member while sustaining the octave. Tune to eliminate the 6:3 beats, allowing the lower octaves to roll just a little flat at the 6:3 level, which may actually correspond to a smoother sounding octave. Many pianos will have 8:4, 10:5 or even 12:6 partials clamoring softly for your attention in the lower bass which may demand that you compromise them all a bit for the best (or sometimes only the least offensive) octave sound. For detailed information on aurally testing the gamut of bass octave types both aurally and electronically see Rick Baldassin's "On Pitch" #4; also, his July 1989 column has an interesting discussion touching on tuning the "best" bass octaves (see references at end).

Moving rather fast, if you average five to 10 seconds for each note at this stage, in three to five minutes you should be able to get all the way down to C1. This is like pitch adjusting, in that you should move fast. Using mainly the single octave as your "working interval," it's also like tuning unisons (the 6:3 partials are just about that clear on many pianos). You may be surprised to find how well you can tune the bass this way when you shift back to fine tuning mode and begin to really hone your work.

If you're good at unison tuning, this approach to tuning the bass should rapidly get you out of the exam "failure zone," though it may not be good enough to pass in every case: you'll need to recheck with another more detailed run and employ some additional tests. The advantage of a good first pass is that on the second pass you're going to be mainly nitpicking rather than tuning, and relaxing somewhat in the knowledge that you're not going to have all those penalty points against your bass tuning simply for not getting all the way down to C1.

Nitpicking

The term "nitpicking" has of course been around for a long time, and has connotations of an unusually perverse and most certainly unnecessary level of criticism. I think it once referred to what you do after sleeping in an insect-infested bed: after you wake up you would have to pick the "nits," or bed lice, off of your body. My dictionary says that to "nitpick" is "to be concerned with or find fault with insignificant details." How appropriate for our work! I believe the term came into circulation among piano technicians doing master tunings in the early days of the exam to describe and perhaps psychologically ameliorate the seeming barrage of criticism the initial tuner had to put up with in the course of having colleagues refine the tuning. One poor soul would tune the piano, and then sweat blood while two to three others acting as a committee would "nitpick" the tuning, making small controlled changes to further refine what was a good tuning to start with. The goal in this process is to end up with as nearly perfect, bug-free a tuning as possible and make a record of it. Some of those nits can be pretty elusive, but that doesn't stop a bunch of nitpicking piano tuners from doing the best they can!

Now let's see how we might find fault with what the world at large would, I am sure, consider "insignificant de-

tails" with regard to bass tuning, and "debug" our first pass effort.

Second Pass Bass

Most of the same aural checks useful in the low midrange will also work well for the upper bass. As a matter of fact it is entirely feasible to extend your temperament well into the bass on many pianos, if you want to take the time. (See "Part IV: Temperament" of this series, under the heading of "Parallel Interval Bracketing" for some ideas on such a method employing an extended contiguous M3/M10/octave framework based on the Sanderson Two-Octave A Temperament.) Some pianos seem to require this, and to resist our neat categories of midrange here and bass down there, especially those that have an abrupt change in inharmonicity over the break between solid tenor and wrapped bass strings.

Examiners try to avoid using such pianos for tuning exams, but occasionally one gets by our initial inspection and we have to deal with it as best we can. As you're making your first or second pass tuning the bass, if you find that there seems to be an irreconcilable conflict between, say, the P5 and the P4 up from the note you're tuning, such that the first sounds too narrow and the second sounds too wide, there may be other tuning mistakes causing this, but sometimes you'll just have to make the best (least-offensive sounding) compromise you can. On such pianos the "outside-sixth, inside-third" test, described shortly, can be helpful crossing the break where nothing seems to sound good.

In the first pass, I suggest tuning mainly single octaves, using the P5/P4 comparison test and perhaps the always handy parallel M3rds and M6ths, almost as if it were a pitch adjustment where you're trying to be a little too careful. I still give high priority to consonant intervals in my second pass routines when tuning the bass, while incorporating faster-beating intervals to check consistency. I proceed with this stage two checking of both midrange and bass by listening first to consonant intervals played in parallel (P4ths, P5ths, octaves, P12ths, and double octaves), using the faster-beating intervals (M3rds, M6ths, M10ths and M17ths) mostly in parallel strings of three as diagnostic tools to make the fine adjustments when I hear a problem in the consonant intervals. My goal is primarily to have consonant intervals sound consonant and similar when played parallel fashion, and secondarily to have smoothly changing parallel M3rds, M6ths, M10ths and M17ths.

Example, octave 2: going down, B2 to C2, listen to some or all of the following consonant intervals, trying to pick out ones that sound different from their chromatic neighbors: single octaves, B2-B3 to C2-C3; double octaves, B2-B4 to C2-C4; P5ths, B2-F#3 to C2-G2; P4ths, B2-E3 to C2-F2; P12ths, B2-F#4 to C2-G3; P19ths, (if available) B2-F#5 to C2-G4.

Inevitably, something will catch your attention, perhaps a subtle flaw in the P12 series, such as the P12, G2-D4 having more of a roll than either F#2-C#4 or G#2-D#4.

You could check this P12 using the sixth-17th test to see whether it's expanded or contracted, as described above, and make an appropriate correction. It's also fine to try to get a quick handle on the situation by playing the parallel Msixths leading down to and below G2-E3, to see which way you might want to move the G2 in order to improve *both* the M6 series and the P12 series. However, there is a better test that gives a lot of information quickly and is especially useful in the upper bass which I'd like to re-introduce here.

The Outside Sixth-Inside Third Test.

Any problem in the consonant intervals in the upper part of octave two and the lower part of octave three can usually be diagnosed with this test. In our P12 example, we don't really know whether the problem is G2 or D4 or whether it's just one of those less- than-ideal intervals that the particular piano we're tuning forces us to accept. You get more information quicker by playing the "outside" M6, G2-E3 vs. the "inside" M3, A2-C#3, which are supposed to be very nearly equal-beating. If the M6 is beating slower (indicating G2 is sharp), it's a pretty good bet that *both* the P12 and the M6 will get better when you correct the M6 by lowering G2 a tad. The test could be applied with G2 in any of the four positions: the upper or lower member of the M6 or the M3, so you could effectively get confirmation or at least a "vote" from as many as 12 notes (majority rules!) on the questions of whether, which way and how much to move that G2. (As an exercise right now, identify these notes; answers follow article, note one.) There are limitations to this test, since it becomes a less reliable indicator the lower in the bass you go, but using it in conjunction with other aural checks should give you the experience to employ this powerful tool effectively in the lower tenor and upper bass.

Hint #19: Listen twice, tune once.

This is not to be confused with my previous instruction for first pass bass tuning, which might be stated as "he who hesitates is lost!" Perhaps it's unnecessary to go as far as we've gone above just to correct a little extra roll in one P12 (I did warn you we would be picking nits here), but on the other hand you should also not be too hasty to change things experimentally. In the tuning exam manual we see the advice in capitol letters to "HIDE THE TUNING HAMMER!" when nitpicking. What this means is not that you should now try to turn the pins by some kind of psychic force, but rather that it's more efficient to play several tests quickly and get verification that more intervals will be made better than will be made worse by changing something than it is to actually make a change and then decide it was better before. Sometimes you will decide to leave well enough alone if you listen more before picking up the hammer again, and that represents a time savings when compared with making a change, deciding you don't like it, and having to make another change to correct the first.

I can't generalize as to how much testing and checking is enough; I know that the more experienced fine tuners rely on a relatively narrow selection of tests and none I know will use all the tests in the book. Experience will be your guide as to which tests allow you to work most efficiently. With experience tuning a lot of fine pianos you may get to where you can hear well enough to tune accurately on the first pass using only a few favorite checks. It helps to cultivate that skill if you're going to survive and prosper in this business, notwithstanding how you do on the tuning exam.

I nearly always check parallel M6ths and M10ths in the upper bass, and parallel M10ths, M17ths, M24ths, and double octave m7ths in the lower bass, after carefully listening to P5ths, P12ths, P19ths, octaves and double octaves, working over sub-sections of about half an octave. Often, I'll employ the outside sixth-inside third test in octaves two and three. I find that after a first pass as described above (on a good day and without distractions!) there's not a whole lot to change, with the ex-

ception of the low bass, previously tuned only with single octaves. I find my low bass notes almost always need more touching up than those in the upper bass. If you find there is a lot to change after a first pass bass in practicing for the exam, then you need to be a little more careful when you do your first pass on the exam piano, or find out if you have an underlying problem here (see hint #21, below).

Your Move

Back to our example, before moving G2 I'll stop and quickly listen to some other intervals to try get verification of which way to move if at all.

To reiterate, I'll first grab a quick P5/P4 comparison check up from the note. For verification I would probably next check parallel M3rds and/or M6ths up from G2 to see if they could improved in the same way by changing G2; if the M3, G2-B2 and/or the M6, G2-E3 were both a wee bit slow in their respective series, this would indicate G2 should go down. (Exercise: identify as many three-interval parallel M3 and M6 series including G2 as you can; see note two for help.)

An outside sixth-inside third test with a slow M6 up from G2 would also be indicative. If the problem is there and the majority of other intervals can be helped by making a move, then make the move. If not, and you can live with the problem, go on. With time, you learn to make these rather complex decisions quickly while avoiding wrong moves.

Uh-Oh!

But if clear verification of the P5/P4 test from most of the four adjacent parallel M3 and/or M6 strings isn't possible, it could take longer. You might have a problem in one of the other intervals being used for the tests which cause the lack of verification. You then have to make an educated guess as to where secondary problems may be and decide whether they warrant fixing.

Hint #20: If an interval sounds like it needs improvement, apply checks to both ends and try to determine which end is more of a problem in its "constellation" of intervals, and fix that end first.

In our example, the principle other suspect note would be the other end of the P12 (D3), and you might recheck contiguous M3s and P4s around D3 to see if correction is justified. Sometimes the scaling of the piano is the problem. In any case, it's your job to correct what you can as quickly as possible and move on. If your tuning is good enough to nitpick, the majority of tests will give a clear indication of what to do with an odd sounding interval like our P12. If not, and you have lots of other problem intervals, you may have to backtrack and re-tune a section more carefully.

Hint #21: If you always have these seemingly insolvable problems checking your bass while tuning fine grand pianos, you should practice more on temperament tuning, and/or tuning for stability, which for you are the more likely root problem areas.

As another example, supposing that you hear a single octave, C2-C3 that has a roll in it unlike the single octaves in its vicinity, and checking C2 you've used the P5/P4 test and the parallel M6 tests and found no consistent verification one way or the other with the tests. So one end of the single octave appears OK, try the other end! Make some fast contiguous interval tests on C3. Sure, you've tuned C3 to fit the midrange, but at the time you may not have had the single octave below at C2 to check, and now that you do it needs to be tweaked a little, or maybe it drifted since you tuned it.

Play octave tests in succession to see if the octave is wider or narrower than the ones around it. Both single and double octaves in close proximity should show consistent "width." In this range you might use either the third-10th test or the m3-M6 test for the singles, whichever you can hear best, and the M3-M17 test for the doubles. Remember that information on the absolute width or size of the octaves is not what we're after so much as the relative width of adjacent octaves, given that adjacent octaves sound acceptable. In our example you know so far only that you like C#2-C#3 and B1-B2 but not C2-C3, and so you're trying to find out what it is about C2-C3 you don't like. You've investigated a few other intervals with C2 and have not found a problem except with the octave. If you find a difference of octave width with C2-C3 compared with octaves adjacent, and you can compress or expand one or both ends of C2-C3 to reduce or eliminate this difference without upsetting other intervals, your octave problem will diminish as it's spread out into other intervals. Remember, if you're good at hiding your "mistakes," you can get away with them on this test!

As Gary Shulze wrote in his March 1982 *Journal* article (see ref.), "I view tuning as being a complex puzzle which has no solution, and approach it with the intent of doing some creative cheating. Piano tuning is an art which involves seemingly endless compromise in the attempt to produce a result which gives the illusion of being "in tune."

Taking It Home With Wider Intervals

After your first pass tuning on the bass and your second run down to where M3rds are too slow to be useful, and P5ths and M6ths are too muddy to hear well, you might want to shift gears into wider intervals. Parallel M10ths and M17ths in both octaves one and two, and wider intervals in octave one are very helpful in fine tuning. Examiners use them extensively for aural verification, so you had better listen to them too. I think of these intervals as doing the same thing to my bass tuning as sandpaper does to a rough board. Though there may be an overall consistency of sound in the octaves after a first pass there is still some smoothing to do. The parallel wider intervals are good for that, and the larger the piano, the better you can usually hear them. A M24, or triple-octave-third, with the upper note an octave above the upper note of the M17 is useful for large grands when the M17 slows too much, and may help transfer the carefully honed consistencies of the midrange into the low bass. In most cases the M17 or the double octave m7, (two notes narrower than the triple octave) played parallel will expose any small inconsistencies in the low bass.

Whatever you do in the low bass, do not forget to recheck your consonant intervals, octaves, double octaves, P12ths and P19ths, none of which should be beating more offensively than absolutely necessary. Of possible interest in the low bass, I have also found some use for the P26, or triple octave fifth. Playing a parallel series, from C2-G5 down to C1-G4, *after* having checked everything else exposes the ordering of the 12th partials of the lower notes, which can be fairly loud on some pianos. This interval seems to get increasingly contracted and faster beating the lower it is, with C2-G5 being nearly beatless, C1-G4 beating at about three to eight bps, (slower speeds on larger grands) and a graduation of rates in the parallel intervals in between. Irregularities here can cause you to recheck your other tests for verification of any problems indicated. An interesting point is that in using this test, the top

end crosses the top of the midrange and will serve to connect the upper temperament area with the lowest bass. But if you haven't tuned above C5 the parallel P26 test is of limited value, since it will only give you a half an octave's worth of intervals. If you have time after tuning the treble you can always come back to it.

In Conclusion

Tuning the bass for the exam can be efficiently accomplished in two stages, one a fast, moderately accurate tuning to correct the detuning and get to all the notes at least once, and another stage involving closer interval checking. You should budget adequate time to do a good job, and still be sure to have enough time to tune the rest of the piano. Experience should teach you how to tune the bass efficiently, and best resolve the compromising that is often needed when the scale changes from plain steel to wrapped. The general procedure that I recommend is to tune the bass with mainly consonant intervals, and make minor corrections to the result with parallel interval checks.

Next month: treble ≡

Notes

1. Testing G2 with outside sixth-inside third, there are four test configurations giving 12 different notes vs. G2: 1) M6 G2-E3/M3 A2-C#3; 2)M6 A#1-G2/M3 C2-E2; 3) M3 G2-B2/M6 F2-D3; 4) M3 D#2-G2/M6 C#2-A#2. The 12 notes in ascending order are: A#1, C2, C#2, D#2, E2, F2, A2, A#2, B2, C#3, D3 and E3.

2. Testing G2 with chromatic parallel Mthirds, use two sequences: 1) F#2-A#2, G2-B2, G#2-C3 and 2) D2-F#2, D#2-G2, E2-G#2. Testing G2 with chromatic parallel Msixths, use two sequences: 1)F#2-D#3, G2-E3, G#2-F3 and 2)A1-F#2, A#1-G2, B1-G#2. Whole tone, m3-related and M3-related parallel series are also possible. A special category of the latter test would be conjunctive Mthirds, D#2-G2 vs. G2-B2, which should beat in an ascending 4:5 ratio (as should the more audible conjunctive M3-related M10ths, D#2-G3, G2-B3 and B2-D#4, which have the unfortunate disadvantage of requiring two hands to play).

Journal References

Baldassin, Rick, October 1983, pp 18-22, "On Pitch," #4; deals with bass octave tuning, illustrating aural and electronic methods for each type.

Baldassin, Rick, July 1989, pp 15-16, "Letters"; Rick comments on tuning the "best" octave in the bass, in response to a letter from Virgil Smith.

Coleman, Sr. Jim, October 1988, pp 31-33, "Passing the Tuning Test"; paragraphs on bass octaves.

Monroe, Paul, February 1982, p 13, "The Tuner"; explains outside 6th- inside third test, some use of strike tones in bass tuning.

Monroe, Paul, March 1983, pp 15 & 26, "The Tuner" subtitled "Tuning Below the Temperament"; on the treble/bass transition and bass tuning.

Shulze, Gary, March 1982, pp 24-25, "Influences of Inharmonicity on Aural Tests in Equal Temperament"; includes interesting though possibly confusing chart in musical notation of equal-beating tests for beatless ratios.

GOOD VIBRATIONS

More On Bridge Reconditioning

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New Mexico Chapter

Last month we discussed bridge renotching as a viable technique for bettering the mechanics of string termination as well as for improving the appearance of the bridges. Continuing along these lines, this article extends and embelishes previously stated ideas on the subject.

You will remember that the example bridge of last month's article was only renotched at the front notch: the rear pins were not pulled and nothing (except for spot touch-up) was done to the graphited top. In addition, since downbearing was quite positive in general, and front and rear bearings were acceptable, bearing did not figure in the decision making process. What motivated the front renotching only was the necessity to cut a sharp string termination and, in the process, remove some minor cracks at the bass of the pins.

But there are times when bridge reconditioning can (and should) be more involved. Some common examples of when: a. the bridge pins are rusty or corroded and all need replacing; b. unsightly cracks exist at the front and rear notches which, as found by some trial carving, can be cut away in renotching; c. the graphited film has partially disintegrated, or has become gummy owing to a wayward Pepsi having been inadvertantly tossed into the baby grand by some catatonic teenybopper. And some less common examples of when: a. the condition of the original soundboard is acceptable in that it is not seriously distorted or flattened and downbearing in general (i.e., the bridge interrupts a straight line from agraffe or capo bar to the rear string rest) is acceptable (or can be made so by soundboard shimming or a bit of plate lowering); but the problem is that *front* bearing is too light or even a tad negative; b. a decision has been made for a new soundboard but initial measurements and tests indicate that should the original bridge (which has been adjudged a good candidate for reuse) be installed, the downbearing angles will actually be too steep. Depending on the actual conditions such a bridge can sometimes be planed down a bit and renotched.

Let's first consider the more common conditions listed above at a, b, and c, where the pins themselves are bad, minor cracks are more or less evident everywhere, and the graphited top is looking a bit pale. If the instrument is worth the trouble, a nice job entails pulling the pins and noting their differing sizes per section (if applicable), leveling the top surface of the bridge, re-graphiting and burnishing the top, drilling out the existing holes (possibly deeper than original), recutting the notches, possibly sizing some or all of the holes with some sort of glue, repinning with new pins, and laying in some shellac followed by gloss varnish. With practice this job can usually be done in a six to ten hour work period, so charge accordingly. But not that some of the processes — pin pulling, miking pins, re-graphiting the top, perhaps re-drilling, and varnishing — do not demand your skilled hand, but can be trusted to a semi-skilled assistant.

Pulling Pins

This seems straightforward enough but there are a few things to watch for. Visegrips are the best tool for this for two reasons: 1. the compound leveraging action of these tools even when not locked gives more grip for the effort than ordinary pliers, and when pulling over 400 pins in a complete job, this feature is essential; 2. the locking feature is necessary where the pins at some place are extraordinarily tight. I sometimes lock the grips at every pin, whether tight or loose, depending on how strong I feel that day, prefering to exert myself in the pulling action only and not in the dual exertion of squeezing *and* pulling.

Use good judgement though: if it takes considerable effort to pull the pins, then cracks or no cracks, it is perhaps advisable to leave well enough alone. When this is the case consider scrubbing the dirty pins and bridge top with a brass wire (or gentle steel wire) brush, touching up the graphite here and there, scraping the notches with a small, sharp, handled "paint scraper," redefining the termination points at the pins with small files or the point of a flexible cabinet scraper, and finally finishing the notches with a slightly opaque shellac colored with "wood-looking" powders (check with artists' supply houses). Follow with gloss varnish. Pulling very tight pins many times causes small chunks of wood between the pins at the termination point to become dislodged. At signs of this, stop the pulling. Something else to keep in mind is that metal is tougher than wood: the clamping jaws of the grips should be well above the bridge top or they will tear up the wood, especially if a twisting action is used (and it usually is) along with pulling.

Pin Sizes

These come from the suppliers in sizes #6 through #10, and in lengths of 3/4, 7/8, and one inch, depending where you shop. Pin micrometer readings and related drill bits from suppliers are as listed in the chart at the top of the next page.

As can be noted, the pin-to-bit/hole differential is not consistent, ranging from .0065" for #10, to .002" for a #9. And a #48 bit is the *same* size as a #6 pin! I have actually used this last combination after first ascertaining that it would

pin size#	*diameter*	*bit size*	*bit diameter*
#6	.076"	#48 or49	.076 or .073
7	.086	45	.082
8	.096	42	.0935
9	.109	36	.1069
10	.135	30	.1285

work by testing in scrap maple: the pins were enough larger than their stated mike reading that the fit was tight. But this isn't always the case. You might consider other combinations of pins/bits but, for the most part, the supply house bits and pins have worked for me. Still, always test first.

Most average sized grand pianos use #6 or #7 in the two highest sections, #7 or #8 from mid to tenor, and #8, #9, or #10 in the bass. Lengths vary: if a pulled pin which was filed on top measures a full 7/8" it most likely started out as a one-inch pin; if it measures a little less than 7/8", then it probably started out at 7/8". Most old instruments never used a 3/4" pin. We are told that the finest piano makers pin with the one-inch pin; I generally use them in recapping or renotching, but not always at the rear notch where I sometimes use a shorter pin.

Leveling The Top Surface

This isn't always necessary but it makes for a real nice job. The old bridge top will be marked with string indentations and a slightly lumpy appearance at the pin hole/terminations. Leveling this surface means removing the small amount of "dead" wood which lies above the string grooves and at the holes. A very small hand plane with a *sharp* blade set to take fine shavings off works well. Even better is a small rabbeting plane which has some heft to it and fine screw adjustability. The rise and fall of the grain in the bridge top or cap needs to be considered or the plane will tear the surface if worked in the wrong direction. Use of a plane will be inhibited if only one or two sections of the bridge are being reconditioned since un-pulled pins exist elsewhere preventing plane movement along the entire length of the surface. The purpose here is to clean and even things out, not to reduce downbearing or change the cross-sectional shape of the bridge (which is another type of problem and will be covered in the future). If uncomfortable with the small plane, cabinet scrapers can be used although they have a tendency to ripple the surface. Sandpaper in a hard block will also work. Obviously, the graphited top will have been removed in full or in part and needs to be put back.

Regraphiting

Do this *before* the notches are recut and the holes re-drilled. Graphite sticks can be used but my preference is a graphite-in-suspension "gunk" called DAG. It comes in small jars and I get the stuff from American Piano Supply (although I imagine it is sold elsewhere). Thin it with alcohol when it seems too viscous for smooth application. Apply the DAG with a small brush and in a matter of minutes it is dry enough for burnishing with a hardwood stick (I use a stiff nylon-flattened rod.) If you imagine that burnishing means forcing the graphite into the pores of the wood, you will understand what to do. Go over with rags, or felt blocks, or felt cloth and polish to a shiny luster. Don't worry if the notches get smudged in the process; they will be renotched anyway. Be careful with the jar of DAG: if spilled, it makes a nasty mess, so keep it away from clumsy people.

Re-drilling The Holes

Like leveling the surface this isn't always necessary. If the pulled pins show uneven length, or if they are short of a full 7/8" in length, consider re-drilling to a 7/8" depth (or a bit more) for the purpose of inserting new one-inch pins of the original diameter. Moreover, if there is enough room for oversized pins, and the original pins were less than tight, drilling for the larger diameter pin is essential. Don't try to drive a #8 pin into a loose #7 hole: you will almost certainly split the bridge at the holes. As mentioned in a previous article, a smaller bit can be used to lengthen the hole if pin sizes are not being changed. Also mentioned was the preferred use of a flexible shaft over an electric high-speed drill. The latter is top-heavy, bulky and sight-obstructing for use with such small drill bits in finicky work; it is also considerably noisy for continuous use. But whatever tool is used, the most important thing to be aware of is to relax the grip on the tool and let the bit follow the existing hole, and then to carefully pull it back out in line with its axis. It helps to know what the angle looks like before inserting the bit. If you haven't done any of this before place small nails (loose fit) in some of the holes where you will be drilling in order to get a visual orientation of how to hold the drilling tool, and then don't fight the flow of the spinning bit, or force it sideways when you actually begin to drill. Another advantage of a flexible shaft over a drill is its lightness; it doesn't fall as readily under its own weight and the operator can more definitely feel what is happening.

Sizing The Holes

A too-loose pin is often defined as one which extracts easily with needle-nose pliers. But if the pins are a tad loose, that is they pulled out with moderate effort, and the visegrips did not have to be locked on the pins, then sizing the holes may be a good idea. This also was explained in a previous article. I prefer to swab (not fill) the holes with a good gap glue and let dry. Small glue blobs left at the hole openings can be quickly and easily cleaned as you go with a damp rag. The combination of hole sizing plus a longer new pin getting a fresh bite at the bottom of an elongated hole, should make for a very tight pin. Sizing isn't always necessary, so trial and error should guide.

Renotching

Renotching was explained in the March article. In addition to cutting a sharp termination for the unison, renotching also removes many of the unsightly cracks as well as dirt, discoloration, and graphite smudges from previous processes. Don't forget to scrape the sides of the notches for a really clean job. If renotching is not being considered, this is the time to scrape the notches clean with a small scraper. Carefully done, scraping (rather than renotching) can cut a new termination point, but the outcome is not as crisp as carving with a chisel.

Repinning

Repinning was also touched upon

in a previous article, but additional thoughts were added here. If the bridges and soundboard are still in the piano, you might want to place wedges between the soundboard and case braces to minimize bounce. Wear hearing protectors if you plan to continue tuning pianos. Assume a steady and comfortable position for pinning, one that does not require leaning into the piano at grotesque and unseemly angles, and make sure you can see the hammer head strike the pin in such a way that there is never any doubt as to how deep the pin is at any moment. Trust the feel of your fingers as you pick up each pin: if one *feels* larger in diameter than the last several just driven, don't drive it; chances are it *is* larger and somehow managed to get mixed up with the wrong batch. Experienced "pinners" reach for the next pin without looking as they are driving the last one. There is no lost motion as the eyes, head and arm are kept more or less locked on target. This comes with lots of practice and is an ideal. I don't recommend this until some elementary proficiency is gained. If you are having trouble with misplaced blows and dented bridges (and it happens to the best of us), start the pin in the hole in the usual way and then hold a thin piece of material (something like a paint stirrer paddle) next to the pin with one hand while hammering with the other. A glancing blow will hit the protection and leave the bridge unharmed. The stick will have to be removed, however, for the final settling blows, but the odds of a dent-free job are greatly increased.

Finishing

My practice is to lay in a generous flow of shellac to each notch; when dry it is followed with gloss varnish. This may seem unduly tedious but actually it goes easily and quickly. Notch finishing may be done before or after pinning, but take care not to slop this gummy stuff onto the bridge top. To hide some minor cracks, mix up small amounts of shellac with wood-toned powders. This will make for a slightly (or completely) opaque notch. Finish over with the gloss varnish. Try the opaque shellac at a few notches; if it looks too "painted" the color is wrong. In any case, if you don't like the effect, the shellac can be scraped off.

Crack Repairs

Still in the news these days is the technique of repairing or filling cracks with epoxy or super glues. Does it work? Yes. That's why it's still in the news. But it doesn't appeal to me for a rebuild which is otherwise considerably thorough; I think of it more as a repair, and experience has shown it to be a long-lasting repair. Epoxy glue is usually a two-part mix of resin and hardener. As an adhesive it is exceedingly strong, it bonds dissimilar materials such as wood and metal (maple and bridge pins), it is an excellent gap filler and its viscosity is low enough that it migrates into porous wood better than usual fast-drying or thick wood gap glues. Thus, the epoxy tentacles extend the bond beyond the local area. These features make it a natural for bridge pin setting and cap repair. Use the slow drying type as the five-minute stuff is only good for, well, five minutes worth of work. Mix well the two parts on a piece of cardboard and discard the mixing tool. Use a paper clip or piece of piano wire to carefully place the glue in the pin holes and related cracks. Drive the pins in slowly so as to better force the glue into the surrounding wood. Don't be surprised sometimes if the liquid rises to the top of an adjacent hole as it has snaked its way through a mysterious system of catacombs within the bowels of the bridge — a good sign. Cracks can be filled by simply laying the glue in until it appears to stop sinking.

In seriously deteriorated bridges where the cracks are wide and long, and pins can be pulled out by a five-year-old kid's bare hand, the epoxy needs to be shoveled into the crack after which the pins are positioned according to your best guess; make the sign of the cross and trust the outcome to higher powers. Two applications are sometimes necessary. Take care to preserve the string terminations. It is difficult to effect a really sweet-looking repair because of the globbing effect of epoxy, because of darkening discoloration, and because cleanup is messy, especially at the bridge surface. Gap-filling type super glues can be used in the same fashion, but they require no mixing. But whether epoxy or super glue, remember that the pins will be bonded to the bridge, and for the most part, cannot be extracted afterward.

Customer Relations

Piano rebuilding is a serious business with a laugh always waiting in the wings. And the more expensive the job, the more serious and hilarious it gets. Never underestimate the customer's desire to know what you are discovering as the piano is being destroyed prior to rebuilding. Customers should be informed as to precisely — at least to within known quantities — what is wrong with their piano, and what is necessary to make it right again. They should be given options as to what is required to make the instrument "like new," almost like new, etc. This isn't to suggest that the customer tell us what *needs* to be done: we're the only ones who can decide that. But there are gray areas. Some pinblocks, for example, can stand repinning with oversize pins, but this isn't a "like new" job, although if the decision was correctly made, the pins should hold for the useful life of the piano. The same is true in bridge work. I reserve extensive epoxy repairs for lesser quality pianos and, of course, expect to be paid much less for the work. On better quality pianos, I have used epoxy sparingly and only at a few places, and that only after having given the customer the option of a more quality fix. Some jobs need to be walked away from because the customer would not, or could not, pay for a new cap when one was clearly warranted. Let's keep a chuckle alongside the challenge — but a ruthless eye on what we are about. ≡

AUXILIARY EXCHANGE

President's Message

"...and along came pretty little May. May was full of promises..." These words excerpted from lines in Rodgers and Hammerstein's, "Carousel" are being used to tell you that the Auxiliary program is complete and we can only assure you your attendance at the international convention in Dallas will be well worth your while. In addition to the traditional, optional tour of the city, one of our members will give us a talk on that ancient instrument, the harp. She will describe and explain its structure, function, capabilities and any limitations. With luck she will play some compositions for us, a little Bach, Mozart, and perhaps some Lehar and Strauss. Our harpist will make the selections.

Our scholarship winners will play their winning pieces at our Sunday Tea. You will see how our funds are dispersed to our ambitious young high-school students who are planning a career in music. We feel that our fund-raising efforts through the sale of cookbooks, piano pins, suncatchers, etc., and individual contributions are well-motivated and a most worthy investment in our youth.

Another one of our members will lecture informally at one of our classes. She will develop her talk along the lines, "A Technician's Wife Looks At The Piano Industry And Its Future." A member with over 25 years in the piano trades, she brings a wealth of knowledge and insight to her subject. We are sure you will enjoy what she has to offer.

A very special aspect to our optional tour will be the afternoon presentation by a road company of actors at the Dallas Repertory Theatre. There will be more details about this in our next message.

Deanna Zeringue of Thibodaux, LA, and *Dorothy Neie* of Pineville, LA, will be on hand to greet you on Saturday, July 7, at our Membership table. They will endeavor to answer questions you may have about the Auxiliary program, how you may join the Auxiliary, as well as any queries about our Scholarship Fund and its awards. On that same day we also urge you to be sure to look for our charming chief hostess, *Sue Speir* and her "team" of assistants who will be circulating in the Auxiliary Hospitality Room, to answer questions you may have about Dallas and the area. They are all "real Dallas folk" who most likely can tell you how far it is to travel to the zoo, where you can get your hair done, which way to the nearest mall and/or Post Office, etc.

In addition to all of the above, there will be a special class on Wednesday morning July 11, for piano teachers. Further information about this class will be provided in the convention program by *Dave Rostkoski*, chairman of the Teachers' Relations Committee.

We also hope to have a few pleasant surprises, so "y'all come on down."

Agnes Huether, PTGA President

Birthdays We Overlooked

March

3 Dorothy Silva
3 Kathleen Booth
4 Earlean Grogan
7 Patricia Heineman-Vernon
8 Ivagene Dege
9 Catherine Hastings
9 Marilyn Orr
11 Judith Bullock
13 Geraldine Leach
16 Martha Wicksell
17 Susan Hoffheins
18 Mary Ann Aiken
19 Phyllis Tremper
22 Edith Rudder
23 Nancy Carnicom
28 Ginger Bryant
28 Ginny Russell
28 Julia Wibiral
30 Shirlie Felton
31 Betty Hundley

April

7 Genevieve Travis
11 Lynda Smit
11 Bessie Meleneck
13 Carol Bussell
20 Christine Monroe
23 Beva Jean Wisenbaker
24 Nancy Lamoreaux
25 Leigh Ann Hale
27 Mary Cooke
27 Helen Love
27 Eleanor Ford
27 Mabel Olney
28 Rugh McQuigg
29 Agnes Huether

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The Great Southwest

Last March 1st, your editor had the good fortune to visit the old and charming city of Santa Fe, NM, while her spouse attended the South Central Regional Spring Seminar. Our plane landed in Albuquerque about 60 miles south of Santa Fe. Albuquerque is a city of over 300,000, and while it retains some of the old world Spanish influence, and a bit of its American Indian heritage, the 20th century has made its impact on this area of the southwest with many tall hotels, apartment dwellings and industrial complexes. Set in the long valley of the Sangre de Cristo Mountains, it prepares one for the beautiful vistas that lie ahead. Our car rental agent gave us a good tip when he recommended we travel north to Santa Fe along the Turquoise Trail rather than the more direct and heavily traveled State Highway 25A.

Santa Fe, the capital, has an elevation of over 7,000 feet. That makes it a bit

continued on next page

California State Does It Again

What a beautiful setting — the Irvine Hilton and Towers, flowing water falls, terrace dining and renewing old friendships. The Auxiliary Hospitality Suite was the place to be! After being graciously greeted by the hostesses **Chris Monroe** and **Pauline Miller,** and given a tour of the elegant suite; you were lead to a serving table filled with enough "goodies" to gain five pounds just looking; offered coffee, tea and then came the "me's." What a lovely surprise to see **Pearl Kreitz,** all the way from Pennsylvania; **June Steves,** from Seattle; **Fern Morton,** looking wonderful; **Ivagene Dege; Dorothea Odenheimer,** taking care of Fred every minute, **Toni Tassoni; Grace Mehaffey,** looking younger every time I see her; **Louise Hofstetter,** as always, ready with a new recipe for me! **Betty Ugla,** from Fresno; **Bea Evans,** (she and Dan will tour Europe this summer); and the list goes on and on. A lovely tour of the Orange County Performing Arts Center, organized by **Peg Browne,** culminated with a Newport Harbor Champagne Lunch Cruise. To see how the other half lives, the cruise took us past the homes of John Wayne, Edgar Bergan, Roy and Dale Evans and Yascha Heifetz. The afternoon was highlighted by viewing a Sailboat Regatta.

The evening was concluded with cocktails and banquet, done in true California style — class! The entertainment featured pianists Gene Robeson and Scott Gould, performing on the magnificent Yamaha Grand. During the last few minutes of the program, a veil of white was noticed floating aroung the room. We all knew it was **Bruno** and **Toni Tassoni** sending up a smoke screen around their table, as it was their Anniversary, but to our disappointment that romance did not prevail. The smoke got thicker and the alarms went off to evacuate the room. We found out it was the disc jockey in the next room setting off flares to signal the "end of the evening." I still question if **Bruno** didn't have something to do with that maneuver!

Thank you, Orange County Chapter, but you make it most difficult for the 1991 hosts, which just happens to be Sacramento!

Ginger Bryant

Piano Technicians Guild Auxiliary To Give Special Awards At TMTA Convention

The Piano Technicians Guild will hold their International Convention in Dallas, July 1990. The Auxiliary awards a scholarship in the field of piano to students within the state hosting the International Convention.

The Auxiliary Board of Directors have allocated $400.00 to the First Place Collegiate winner in Piano and $200.00 to First Place High School winner in Piano from the TMTA/MTNA Auditions held in November in Denton. A member of the Piano Technicians Guild Auxiliary will present these awards at the TMTA Convention.

The preceding article appeared in the February issue of the Texas Music Teachers publication, which is distributed to their members in Texas, numbered 2,060.

Ginger Bryant, Chairman, Scholarship Committee

1990-91 Officers Slated

The Nominating Committee, chaired by Ginny Russell and assisted by Margaret Moonan and Jeanine Geiger, has completed its assignment and the following slate of officers has been submitted and recommended for your consideration in the 1990-1991 election of officers to the Piano Technicians Guild Auxiliary:

President — Arlene Paetow
Vice President — Phyllis Tremper
Recording Secretary — Ivagene Denge
Corresponding Secretary — Margaret Moonan
Treasurer — Barbara Fandrich

Thank You

I wish to thank all who sent cards and expressed their sympathy. They were deeply appreciated, and just knowing you cared was a great comfort.

Helen M. Kingsbury

continued from previous page

over the "Mile-High" city of Denver. During the eight days we were there, the temperature by day was in the low to mid-60s, while at night the temperature might drop to a chilly 35°. Each morning we had to scrape the frost from the car windows. But the air was dry, occasionally breezy with blue skies and large, fleecy clouds scudding across the heavens. It is no wonder artists like Georgia O'Keefe and ceramic artist Vera Russell elected to leave their native states and adopted New Mexico for their home.

We were a happy group at the Santa Fe Hilton. Although there was no Auxiliary program as such — we do not believe there is even a Santa Fe Guild Chapter — we members of the Auxiliary soon found each other and struck out on a walking trip of this unique adobe town. Santa Fe is practically a one-industry city. Most of the residents are employed in the Federal and State offices, courts and allied disciplines. The remainder of the Santa Feans are purveyors of Indian and Mexican crafts, silver and turquoise jewelry, rugs, pottery, woolen shawls and blankets, most of which are all hand-loomed.

After all-day strolls along San Francisco Street, Cerrillos Road, and the Old Santa Fe Trail, we were ready to join our spouses for a delightful and most filling meal at Vanessie's of Santa Fe, where we heard the piano artistry of Doug Montgomery. He played every request from Bach to Bachrach, and Cole Porter to Rodgers and Hart. We feasted on superb entrees and "memorable" onion loaves! Ask anyone who was there.

On Saturday morning we who did not attend classes traveled with a busload of other tourists through downtown Santa Fe, where we had hiked the day before. We learned about what we had seen and the history of the city. As we were driven up West San Francisco Street to what had been the town square, our tour guide ticked off the many admini-

strations, battles, peace treaties and heroic events that had taken place in this relatively small area. Canyon Road, originally known as Camino Cañon and now the mecca of artists who have work on exhibit in the many fashionable galleries, goes back three centuries! It has seen the armed conquistadores from Spain, the warriors of Indian Tribes, United States dragoons, men of the Confederacy, and such notables as Billy (the kid) Bonney, Kit Carson, and Pancho Villa! There were many honorable and constructive dwellers in this country as well. Archbishop Jean Baptiste Lamy who built the famous San Francisco Cathedral and established many schools for Mexican and Indian children was given special mention.

When our bus brought us to the fork of Old Santa Fe Trail and Canyon Road, we were escorted by our guide into the 15th century church of Cristo Rey with its altar screen of ancient vintage and a weight of many, many tons! We were told that Archbishop Lamy was the model for Willa Cather's novel, "Death Comes To The Archbishop," and the novel was recommended to us. As our tour resumed, the many colleges, galleries, art museums and seminaries were pointed out to us as our bus climbed higher and higher. Finally we came to a broad table-land, or mesa, and stopped there to visit the Wheelwright Museum of the American Indian. At one time it was the House of Navajo Religion, and today a highly admired museum. It was truly a must. The Cast Trading Post, located on the lower level, is a replica of a turn-of-the-century trading post.

We all returned to our hotel impressed with our capsuled history lesson covering three centuries, and with an increased appreciation of our early Americans who left us a rich heritage. What will we leave for those who come after us? Ski slopes, sky scrapers, giant freeways, and airports?

That evening we attended the Guild banquet where all the instructors, exhibitors and Guild officers were announced, introduced and thanked. No one thought of us members of the Auxiliary although we numbered seven! There were Betty Defebaugh, Mimi Drasche, Jeanine Geiger, Agnes Huether, Dorothy Neie, Sue Speir and Deanna Zeringue. We were all well satisfied that we, in our own small way, had helped the economy of Santa Fe with our purchases of silver, turquoise, Mexican saddle blankets, tiny tin ornaments, and sandstone Christmas tree ornaments.

Agnes Huether, Editor

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REGION 7

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WEST JORDAN, UT 84084

CHAPTER 972 — PORTLAND, OR

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1870 CITY VIEW
EUGENE, OR 97405

THOMAS W. TURNER
650 SOUTH 12TH
COTTAGE GROVE, OR 97424

Coming Events

May 18-19, 1990	**Intermountain Seminar** Provo, UT Contact: Jack Reeves, 486 N. 300 W., Orem, UT 84057 (801) 225-1757
July 7-11, 1990	**33rd Annual PTG Convention & Technical Institute** Hyatt Regency Dallas at Reunion Contact: Piano Technicians Guild, Inc., 4510 Belleview, Suite 100, Kansas City, MO 64111 (816) 753-7747
Sept. 28-30, 1990	**Florida State Seminar** Hilton Hotel, Pensacola, FL Contact: Danny Lyons, 1224 E. Cervantes Street, Pensacola, FL 32501 (904) 438-8969
Oct. 5-7, 1990	**Ohio State Conference** Days Hotel, North Randall (Cleveland), OH Contact: Bob Russell, 1414 Lander Road, Mayfield Heights, OH 44124 (216) 449-5212
Oct. 17-20, 1990	**New York State Conference** Holiday Inn, Binghamton, NY Contact: Donald R. McKechnie, 1660 Slaterville Road, Ithaca, NY 14850 (607) 277-7112
Oct. 19-21, 1990	**Wisconsin Days** Yahara Center, Madison, WI Contact: Norman Sheppard, 5715 Cedar Place, Madison, WI 53705 (608) 233-3844

Correction

In the recent membership directory listing of industry contacts, the following were omitted:

Bosendorfer Service Department
Vince Cooke,
Operations Manager
c/o Kimball World
P.O. Box 230, Highway 56
French Lick, IN 47432
(812) 936-4529

Jasper American Products
(Conn Pianos)
Judy Weikert, Administrative Service Manager
Kimball Piano Division
P.O. Box 432
French Lick, IN 47432
(800) 937-4522

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THE GUIDE $10. The Piano Technicians Guide. A job-time study and work guide. Revised and printed to fit a pocket. **Newton J. Hunt, Piano Tuner-Technician; 74 Tunison Road; New Brunswick, NJ 08901. (201) 932-6686**

"LET'S TUNE UP" $20.00 per copy. Last few hardbacks will soon be gone. No immediate plans for another printing. Paperbacks still available at $17.50. Make checks payable to **John W. Travis; 8012 Carroll Avenue; Takoma Park, MD 20912.**

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Wanted

PIANO TECHNICIAN SEEKS WORK. Pianist/composer/teacher. Handsome, athletic, responsible, hard-working. Degree in piano tuning and repair, one year experience tuning by ear, regulating, minor repair. Prefer resort area. **Charles Magruder; 1511 1st Avenue North; Fort Dodge, IA 50501 (515) 955-5300**

WANTED: STEINWAY AND MASON HAMLIN GRANDS. All sizes and cabinet styles. **Ask for Karen Bean at (415) 676-3355. Piano Finders; P.O. Box 23814; Pleasant Hill, CA 94523.**

JOB OPENINGS IN STEINWAY REBUILDING SHOP: Piano Action Rebuilder: Action rebuilding and regulation in shop. Restringing and tuning skills not necessary, but a plus; **Tuner/Technician:** Tuning regulation and minor repairs in customer homes. Appraising of pianos for repairs; **Refinishing/Touch-up Specialist:** To do tuning and repairs on piano cabinets in shop; **Manager:** Parts ordering and inventory management for shop and office. Experience with computers or job costing not necessary, but a plus. **Karen Bean; Piano Finders; P.O. Box 23814; Pleasant Hill, CA 94523.**

WANTED: Still looking for Steinway player grand in fancy case (prefer unrestored). Will also consider Mason & Hamlin, Knabe or Chickering. Reward for successful leads. **Kavouras; 2740 Lighthouse Court; Lynwood, IL 60411. (312) 474-8787**

TECHNICAL SERVICE REPRESENTATIVE Yamaha Corporation of America has an opening for a Technical Service Representative in the Keyboard Division, Piano Service Department. The major responsibility of this position is to provide information to dealers, technicians, consumer and company personnel related to acoustic pianos. Experience in piano service as a piano technician is required. Must have excellent communication skills, ability to deal with the public and a strong commitment to providing excellent customer service. The successful candidate for this position must have the ability to work in a team environment. Please submit resume with salary history. **Yamaha; 6600 Orangethorpe Avenue; Buena Park, CA 90622. Attention: Mary Ann Stephens. EOE**

TECHNICIAN REQUESTING WORK IN THE U.S. OR CANADA. Experience includes: 2 years — action assembly; 10 years tuning (aural) and repair. **Contact: Nicolas Briza; 118 Bolosan; 2400 Dagupan City, PHILIPPINES.**

WANT TO BUY. Steinway duo-art player grand. Will pay finders fee. Especially want carved (fancy) case. Call Collect, **Jim Brady; (317) 259-4307; 2725 E. 56th Street; Indianapolis, IN 46220.**

UP TO $1000.00 FINDER'S FEE will be paid for successful purchase of a Mason and Hamlin Ex-Player. I have mechanism to install. **Please call collect (317) 259-4307 or evenings (317) 849-1469. Jim Brady; 4609 Cranbrook Drive; Indianapolis, IN 46250.**

INSTRUCTOR WANTED; RTT needed to teach piano repair. Saturday only — flexible — good pay. **S.F School of Piano Tuning — 657 Mission Street; Suite #507; San Francisco, CA 94105 — Tele: (415) 543-9833.**

WANTED!! DEAD OR ALIVE: "Steinway Uprights." Call collect, **Ben Knauer (818) 343-7744.**

WANTED TO BUY — Complete set of used tuning and regulating tools. **Timothy Bennett c/o A.S.J.; 1165 San Juan Drive; Edwardsville, IL 62025 (618) 656-1600.**

INDEX OF DISPLAY ADVERTISING

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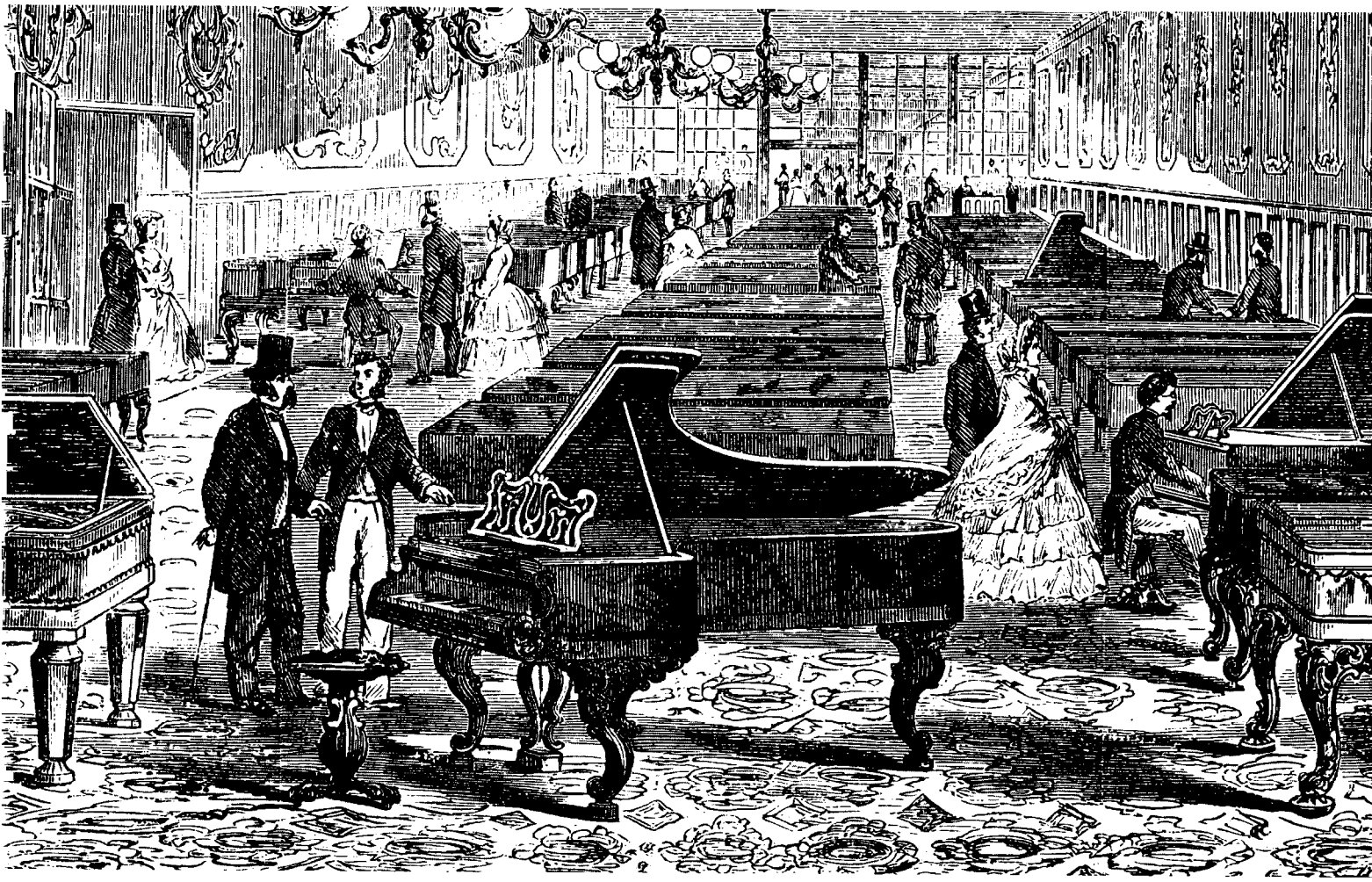

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Tech Gazette

Yamaha Piano Service May, 1990

Your Help is Needed

You've probably noticed our list of Little Red Schoolhouse graduates on the back cover of the last three issues of Piano Technicians Journal. We think you'll agree: It's a most impressive group!

Very soon, however, (for reasons that will soon become apparent) we will be updating and correcting this list.

That's where we need your help. If you are aware of any omissions, misspelled names, or name changes on this list, please call us toll-free at (800) 854-1569!

Tech Tour

YAMAHA TECHNICIANS COMPLETE THIRD ANNUAL SPRING INSTITUTIONAL TOUR.

Yamaha Concert Service piano technicians have recently wound up their third national Spring Institutional Tour. As in the past, the group's goal was to offer assistance and expertise in the service of Yamaha grand pianos in regular use at the schools visited.

The Spring, 1990 team was led by Joel Kabakov, Director of Institutional Development for YCA's Keyboard Division. Joining Joel were Yoji Suzuki, Director of Piano Services; and Hank Tamaishi, Taka Hodouchi, Ted Ono and Jack Caskey. Institutions they visited included Rutgers University, Memphis University, the University of Nevada at Las Vegas, the University of Southern California and Louisiana State University.

Grand Action Regulation in 37 Steps... One at a Time

FIRST IN A SERIES: GRAND ACTION REGULATION

Beginning in this issue, we offer you the opportunity to review all the steps in our grand action regulation procedure. In order to cover the subject properly, we will confine this review exclusively to grand action regulation—leaving topics such as repair and refurbishing for other discussions.

Think of a high-quality grand action that is new and in good working order. With that in mind, where would you choose to do the actual work of regulation? At the piano? At your shop?

If you answered "At the piano", you're absolutely right. While major repairs and rebuilding are best done in the shop, it is impossible to duplicate a piano's existence there. More accurate regulation occurs at the piano itself. Regulation, in fact, must be thought of as customizing an action to perform at its best in a particular piano. That's why it makes such good sense to go to that piano and work within the conditions found there.

Proper preparation is essential for regulation at the piano. Think through all the contingencies first—such as where to put case parts to protect them from damage and the actions of children or pets in the home. And carry a blanket or other protective padding in case the grand piano top is the only workbench available.

We think that you will find a new level of communication, accuracy and precision by working at the piano—one that far outweighs any inconvenience found in preparation.

Coming in the next issue: More tips on preparation at the piano that may be needed before actually beginning the work of grand action regulation.

Personnel Profiles

KATHY CALLAWAY

If you have phoned Yamaha for Piano Parts during the past eight months, you've probably spoken with Kathy Miranda Callaway, Dealer Service Representative in Piano Service.

A member of Yamaha Piano Service for nearly a year, Kathy enjoys helping people in any way she can and has proven it with her outstanding front-line performance!

Kathy was born and raised in the Atlanta, GA vicinity, and moved to California six years ago. When she is not assisting Yamaha Piano Parts customers, Kathy enjoys reading, collecting vintage jazz albums, and collecting butterflies with daughters Shermekka, 12, and Rachel, 8.

YAMAHA

MAY **UPDATE** 1990

Published Monthly For Members Of The Piano Technicians Guild, Inc.

In Respectful Memory...

C. Guy McKay

On Tuesday, February 20, 1990, C. Guy McKay suffered a massive heart attack and passed on immediately at the age of 63. Guy ran two to three miles every day, and was active at keeping himself fit. He died after swimming at his health club. Although humble and self-effacing, Guy was a mainstay of the Indianapolis Chapter for years. He was always willing to give of himself to new technicians or to get involved in chapter projects.

Guy was one of the first CTEs in the Guild. He had been involved in the new tuning exam for nearly two years prior to its becoming the official PTG exam. If there was anything that would raise standards, Guy would always go for it.

Guy was the concert technician for the Indianapolis Symphony Orchestra for many years and always took a special interest and pleasure in doing concert work. He gave more than was expected of him just to be sure things were absolutely right.

As he recovered from the loss of his wife, Babe, in 1986, Guy had allowed himself to slow down these past years and take more time to travel and pursue hobbies. He spent nearly a month away from home when he went to Portland for the convention.

I have so many memories of Guy, from his help in my beginning years to meeting every week to measure piano scales and do re-

continued on page 2

Proposed Changes To Bylaws, Regulations, And Codes — 1990

The following proposed changes to the Guild Bylaws, Regulations and Codes have been submitted by the Guild's Bylaws Committee for consideration by chapter delegates during the 1990 Council meeting. The Council meeting will be held July 6-7 during this summer's convention at the Hyatt Regency Reunion in Dallas.

Bylaws Committee members are Sharla Kistler, Chair; James Birch; Donald Mannino; and Robert Smit (ex officio).

Note: All designations of Articles, Sections, Numbers, Letters, etc. refer to THE PIANO TECHNICIANS GUILD, INC.'s Bylaws, Regulations, and Codes as amended in July, 1988 and published in the April, 1990 Directory Issue of the *Piano Technicians Journal*. Please bring your copy to Council for reference purposes.

Comment is made, unless otherwise specified, by the Bylaws, Regulations, and Codes Committee, hereinafter referred to as the Bylaws Committee.

Action 1A — Creation And Definition Of Affiliate Category

(Source: Philadelphia Chapter)

BYLAWS, Article III, Section 1

1. Under "nonfranchised members," insert "Affiliate" as letter "b)" and change "honorary" to letter "c)"

Proposed Wording:

Nonfranchised members shall be classified:

a) Associate
b) Affiliate
c) Honorary

BYLAWS, Article III, Section 2

2. Create a new paragraph "e)" as follows and re-letter the present paragraph "e)" as paragraph "f):"

Proposed Wording:

e) Affiliates shall be Nonfranchised members who do not provide the services of piano technicians and/or rebuilders and have met the requirements of the Bylaws as described in a. above and Article IV. Examples of eligibility for this category include retailers, movers, refinishers, platers, piano component manufacturers, etc. They shall receive the *Journal* and be included in the PTG death benefit insurance policy. Affiliate members may not vote and are not counted toward chapter strength in Council. They may not hold chapter office, but they may serve on committees except as chairman. An Affiliate member who wishes to do business as a piano technician outside his/her own place of business must request reclassification as an Associate member.

f) Honorary members shall (etc.)

BYLAWS, Article VI, Section 1

3. Create a new letter "c)" as follows and re-letter subsequent paragraphs accordingly:

Proposed Wording:

c. Dues for Affiliate members shall be 100% of the RTT dues.

Comment: The present membership structure (Registered Tuner-Technician, Associate, and Honorary members) was preceded by the multiple clas-

continued on page 2

In Memory...

search on scale design. When I was newsletter editor, Guy was the one person who would write a column every month without fail and without prompting. Guy and I covered each other's tunings when we got sick, and gave each other second opinions on pianos.

Guy's passing will leave a large hole that can't be filled and we will all miss him immeasurably.

Ron Berry
Indianapolis, IN Chapter

Scotty Welton

Scotty Welton passed away Tuesday morning September 26, 1989, after a brief illness. His presence and guidance will be greatly missed by all of us. Scotty has touched and inspired a number of individuals during his 72 years.

"He was 'One' with the piano." Scotty began his love affair with the piano while a pilot for Eastern Airlines. During one of his 24-hour layovers in Atlanta in 1947, he discovered a book on piano tuning in a library there. He found that the tuning of a piano was similar to the synchronization of the plane's propellors. His thirst for knowledge took him to a variety of piano shops and factories during his layovers. He retired in 1976 after 36 years of service as a commercial airline pilot.

Welton

The Piano Technicians Guild was a special part of Scotty's life. In 1953, he was accepted as a Craftsman member of the ASPT New York Chapter. Moving to Connecticut in 1954, he transferred to the Connecticut Chapter. He guided the chapter as president from 1968 to 1970 and later led the region as the Northeast Regional Vice President

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Bylaws...

sification membership structure which included Registered Technician, Apprentice, Student, Affiliate, Associate, Allied Tradesman, and Honorary categories. Each structure has had its own set of advantages and disadvantages. To accept Philadelphia's proposal to establish the affiliate category would be to move in the direction of again having multiple categories as we did in the earlier structure listed above. Consideration should be given to whether or not our organization wants to move in that direction. A potential positive effect of Philadelphia's proposal on our present structure would be that, upon removing the proposed Affiliate categories from the present Associate category, the remaining categories of aspiring piano technicians and non-tuning rebuilders could be dealt with more directly than in the case of the present all-inclusive Associate classification.

The Bylaws Committee recommends that time (subject to a limit) be granted for informal discussion by the delegates of the 1990 Council sometime prior to the vote on this proposal for the purpose of discussing membership structure in general and whether or not it should be changed.

Note: If Council votes to establish this new category of "affiliate," housekeeping changes will be made wherever necessary throughout the Bylaws and Regulations to reflect the new category.

Action 1B — Affiliate Advertising
(Source: Philadelphia Chapter)
BYLAWS, Article III, Section 3

1. Create a new paragraph as follows and label it paragraph "d):"

Proposed Wording:
d) Affiliate members shall have the right to use the Piano Technicians Guild name, but said name must be accompanied by the words "Affiliate Member" in letters no smaller than those used for "Piano Technicians Guild." The PTG name may not be used or displayed by any company or corporation or in connection with any "dba" unless the affiliate's name accompanies it.

Comment: The Bylaws Committee recommends adoption of this proposal contingent upon the adoption of Action 1A.

Action 2 - Associate Advertising
(Source: Bylaws Committee)
BYLAWS, Article III, Section 3, Paragraph c

1. Replace "along with" with the words "but said name must be accompanied by."

Proposed Wording:
c. Associate members shall have the right to use the Piano Technicians Guild name, but said name must be accompanied by the words "Associate Member" in letters no smaller than those used for "Piano Technicians Guild." (etc.)

Comment: The proposed wording sets forth an obligation to use the accompanying words "Associate Member." The present wording merely offers permission if desired. The Bylaws Committee recommends adoption of this proposal.

Action 3 - Time Constraints For Associates
(Source: Philadelphia Chapter)
BYLAWS, Article III, Section 2, Paragraph d

1. Add the following sentences to the present paragraph d): "Associate members shall be required to take and pass the RTT Exams within five years after the date on which their membership begins. If the five-year limit is reached and the Associate has not passed the RTT exams, he/she shall be dropped from PTG membership. Re-application of an Associate dropped in this manner shall be contingent upon his/her passing the RTT exams."

Proposed Wording:
d. Associates shall be Nonfranchised members who have met the requirements of the Bylaws as described in a) above and Article IV. They shall receive the *Journal* and be included in the PTG death benefit insurance policy. Associate members may not vote and are not counted toward chapter voting strength in Council. They may hold chapter office, excluding those of President or Vice-

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from 1973-1974. He gave many hours of service to the Connecticut Chapter, to chapters in the Northeast, and to the International Conventions. He gave technicals at chapter meetings and taught at seminars and conventions. He gave Bench examinations at the International Conventions as well. Scotty was in the Guild, and the Guild was in Scotty.

Scotty had an eye for detail and a desire to do the job the right way. He would creatively adapt a tool or make a new jig to produce a professional job. He had a love affair with tools as well. His shop, Welton's Piano Emporium, was well-equipped with tools and the jigs that he had made. Having the proper tools for the job was most important. He always said to "use the right tool" and "learn how to use the tools you have." It has been a real privilege to work along side Scotty for the last six years. Every day was a real learning experience and I am so grateful for the knowledge he shared with me.

Scotty, your ideals and teachings will guide us into the future. Thank you.

Jim Birch,
Connecticut Chapter

Howard Roach Beesley

Howard Roach Beesley, 85, died January 27, 1990, in Salt Lake City, UT.

Beesley

Born November 28, 1904 to Aidel Ladd and Adebert Beesley, married Stella Ericksen.

Roach gave many classes on the national level at the PTG National Conventions. He was regarded as the premier piano technician in Utah. He had an uncanny ear for tuning and could regulate a grand action with the naked eye far better than

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President. They may serve on committees but may not be committee chairmen. Associate members shall be required to take and pass the RTT Exams within five years after the date on which their membership begins. If the five-year limit is reached and the Associate has not passed the RTT Exams, he/she shall be dropped from membership. Re-application of an Associate dropped in this manner shall be contingent upon his/her passing the RTT exams.

Note: Philadelphia Chapter recommends that Council take action to require members *who have been Associates for more than four years as of July 8, 1990* to take the RTT Exams no later than July 6, 1991. In the event of failure to pass the RTT Exams within this one-year time limit, these Associates shall be dropped from membership. Re-application of an Associate dropped in this manner shall be contingent upon his/her passing the RTT Exams.

Comment: The Bylaws Committee recommends defeat of this proposal on the basis that it can only be applied to the aspiring piano technician segment of the Associate classification. These aspiring technicians would have to be separated out before time constraints could be placed upon them.

Action 4 - Collection Of Dues

(Source: Bylaws Committee)

BYLAWS, Article VI, Section 3, Paragraph a

1. Insert the word "International" between "All" and "PTG" and add the following sentence: "Chapter PTG dues shall be billed and collected by either the chapter or, upon chapter approval and completion of the proper form, the Home Office. (See REGULATIONS, III-B)"

Proposed Wording:

a. All International PTG dues shall be billed and collected by the Home Office. Chapter PTG dues shall be billed and collected by either the chapter or, upon chapter approval and completion of the proper form, the Home Office. (See REGULATIONS, III-B)

Comment: The Bylaws Committee recommends adoption of this proposal.

Action 5 - Status Of Ethics Committee

(Source: Executive Board)

BYLAWS, Article XIV, Section 1

1. Remove "Ethics;" from the list of standing committees.

REGULATIONS, Article II, Section B, Paragraph 10

2. Eliminate paragraph 10) and re-number the subsequent paragraphs. Present paragraph 10): "Internal Code of Ethics — There shall be a standing committee for PTG internal code of ethics.

Note: The Internal Code of Ethics Committee has done a very thorough job of revising our Disciplinary Code. The committee feels that the future need for their existence will be sporadic. Therefore they suggest eliminating this committee from the list of standing committees, with a similar group to be appointed as the need arises. The Executive Board concurs and thus offers this amendment.

Comment: Grounds for disciplinary action found in the proposed Disciplinary Code revision herein include:

b. Gross violation of established moral principles
c. Premeditated and/or continued violation of professional ethics
d. Willful conduct contrary to the interest of fellow members
f. Continued and/or willful violation of the PTG Standards of Professional Conduct, PTG Rules of Business Conduct, and/or PTG Code of Ethics.

It is up to the violating member's chapter to begin disciplinary code proceedings by filing charges. The possibility exists that the chapter involved will be in need of advice as to the ethics or breach of same involving the anticipated disciplinary charges before they are filed and come under the jurisdiction of the Member's rights Committee. If an ethics committee were to be appointed as potential charges were being considered, the violating member could claim that the judgment of the committee was a result of the personalities of

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most technicians can wearing glasses. He was the piano tuner for the University of Utah. In 1926, Roach spent time under the guidance of the now dispersed Aeolian-American Piano Factory located in Boston. He worked and studied with the top piano craftsmen at this factory who learned the trade in the old world. From the Scandinavian countries, England and Germany, these master craftsmen came to America to work in our piano factories producing some of the finest piano works of art ever known, and whose artistry survives to this day. Roach, while learning all phases of piano construction, also attended the Aeolian Player-Piano School.

He sojourned to Southern California and Los Angeles then settled back in Salt Lake. He worked in his uncle's music store for 45 years.

In June of 1954, Roach, Ralph Barrus and Lucian Brown with several other Salt Lake tuners organized the Salt Lake Chapter #34 of the American Society of Piano Technicians. A.S.P.T. later merged into the Piano Technicians Guild. Roach was first chapter president.

And so, Roach, we bid you a fond farewell, friend, teacher, colleague, gentleman. You will be greatly missed.

Ralph Barrus, RTT
Lucian Brown, RTT

Achielle Hamilton

Achielle "Art" Hamilton, 76, of West Palm Beach, FL, died January 2, 1990, after a prolonged illness which he courageously fought.

He was a Craftsman member of the Piano Technicians Guild since the mid-1960s, and was a member of the Master Piano Technicians of America. Art was a sought-after concert technician

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the particular committee members chosen. As a preventive measure, therefore, the Bylaws Committee feels that it would be better to have an Ethics Committee, albeit an inactive committee, in place as a standing committee and thereby recommends defeat of this proposal.

Action 6 - Emergency Reserve Fund
(Source: Executive Board)
BYLAWS, Article XVII, Section 3, Paragraph a

1. Change "one percent (1%)" to "two percent (2%)."

Proposed Wording:
a. A minimum of two percent (2%) of PTG annual income shall be deposited in a separate savings account to be known as the PTG emergency fund. The Executive Board *(etc.)*

Comment: Financial experts recommend keeping a cushion of at least one year's operating expenses, and preferably two or three years' expenses. Potential inflation presents the need to increase reserves in order to remain current. The Bylaws Committee recommends adoption of this proposal.

Action 7 — Parliamentary Authority
(Source: Executive Board)
BYLAWS, Article XVIII
1. Replace the present wording with the proposed wording.

Present Wording:
"Roberts Rules of Order Newly Revised" shall be the rules of the PTG in all cases not covered specifically by these Bylaws, Regulations, and other PTG rules and documents.

Proposed Wording:
The current edition of the Scott, Foresman "Robert's Rules Of Order Newly Revised" shall be the rules of the PTG in all cases not covered specifically by these Bylaws, Regulations, and other PTG rules and documents.

Comment: The Bylaws Committee recommends adoption of this proposal.

Action 8 — Elimination Of Death Benefit
(Source: Boulder Chapter)
REGULATIONS, Article III, Section A

1. Delete section A and re-label subsequent sections.

Present Wording:
Section A - Death Benefit

1. The Council hereby authorizes the Board to establish a death benefit plan in the minimum amount of one thousand dollars ($1,000) for eligible members and authorizes the expenditure of a portion of the dues for this purpose.
2. The executive director shall be the administrator of the death benefit plan, thereby authorized to remit premiums, appoint the agent of record, and make the necessary legal reports.
3. Sustaining members of both classes shall be covered by the PTG death benefit, providing the coverage was in effect at the time of election to sustaining membership.

Note: The Boulder Chapter feels that the present Guild life insurance program is not a good buy, providing $1,000 coverage at approximately $14.00 per year per member compared to the $4.00 to $5.00 average cost of a personal policy for the same amount of term coverage. Anticipated increases in premiums as well as in burial costs make the $1,000 coverage even more impractical. The elimination of the death benefit would free approximately $50,000 which could be used to benefit members in some other way, perhaps avoiding or delaying the next increase in dues.

Comment: To vote *for* Action 8 is to eliminate the present death benefit. As shown by the Boulder Chapter's figures, our death benefit plan is expensive, and, considering inflation, the time will come when we will not be able to afford it. A solution might be to develop some sort of Member Equity Program to take the place of the Life Insurance Program. However, in the absence of such an alternative, the Bylaws Committee recommends defeat of this proposal.

Actions 9A through 9M deal with the

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and was held in the highest regard by many famous concert masters and pianists.

He was an instructor at seminars and conventions held by the PTG and MPT. His particular area of interest was in the shaping and voicing of hammers, and he delighted in making a good piano sound its best.

Art also was a good pianist and played in many fine clubs and hotels. He was a jazz buff, and loved the big band sound. His life was music and making others happy with their instruments.

Being a former member of the PTG Connecticut Chapter, he was personally acquainted with and counted as his friends some of the most knowledgable men in the industry, such as Steve Jellen.

His art, knowledge and talents were passed on to his two sons, Reginald V. Hamilton, RTT, and Daniel R. Hamilton, RTT.

His other main interest and vocation in life was giving freely of his time to study the Bible with those who wanted to know more about God's purpose for mankind. Art had a strong conviction based on the Scriptures and shared his beliefs freely with both the famous and the lowly. He spent his last days helping others to come to a knowledge of his God — Jehovah. He is survived by his wife of 50 years, Marion G. Hamilton; two sons, Reginald and Daniel; a daughter-in-law, Dagmar; and two grandchildren, Jonas and Tobias Hamilton.

Daniel R. Hamilton
Palm Beach, FL Chapter

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Disciplinary Code. At the 1989 Council Session the Internal Code of Ethics Committee presented a revised format of the Disciplinary Code for approval as a "working copy" from which a major revision could be made. (Ref: Council Minutes #C89-47) The working copy consisted of a reorganization of the items in the existing disciplinary code, and no substantive changes were made or intended. The references to "Present wording" in the following proposed amendments are references to the working copy.

Action 9A — I. Charges And Jurisdiciton — A. Grounds for Action

1. In I-A-l, delete the first use of the word "offenses."
2. In I-A-l, replace the word "Penal" with the word "Disciplinary."
3. Add a new paragraph "f" under I-A-l. (see below)
4. Delete paragraphs 2, 3, and 4 and replace with a new Paragraph 2.

Present I-A:
A.Grounds for Action

1. The following offenses shall be deemed offenses against PTG and shall be dealt with in accordance with the Penal Code:
   a. Malfeasance in office.
   b. Gross violation of established moral principles.
   c. Premeditated and/or continued violation of professional ethics.
   d. Willful conduct contrary to the interest of fellow members.
   e. Conviction of a criminal offense in a court of law.
2. The definition of delinquency in the payment of dues, fees, levies, and assessments, and the procedures to be followed in the dealing with such delinquencies, shall appear in the Penal Code.
3. A member shall be considered delinquent in dues if said dues are not paid by January 31. If said dues are not paid within the following 30 days, action shall be taken in accordance with JP-III.
4. When a member fails or refuses to pay dues, either chapter or Guild, the executive director shall, after proper notification, drop the delinquent member from the membership.

Proposed I-A:
A. Grounds for Action

1. The following shall be deemed offenses against PTG and shall be dealt with in accordance with the Disciplinary Code:
   a. Malfeasance in office.
   b. Gross violation of established moral principles.
   c. Premeditated and/or continued violation of professional ethics.
   d. Willful conduct contrary to the interest of fellow members.
   e. Conviction of a criminal offense in a court of law.
   f. Continued and/or willful violation of the PTG Standards of Professional Conduct, PTG Rules of Business Conduct, and/or PTG Code of Ethics.
2. Delinquency in the payment of dues, fees, levies, and assessments shall be cause to drop a person from the membership rolls in accordance with Article VI, Section 3 following notification. No trial shall be required in order to drop a member for nonpayment of such monies.

Action 9B — I. Charges And Jurisdiction — B. Jurisdiction

1. In I-B-l, delete the last phrase, beginning with "Provided:" and continuing to the end of the paragraph.
2. Replace I-B-3 with a new Paragraph 3 as proposed. (see below)
3. Add a new paragraph 5. (see below)

Present I-B:
B. Jurisdiction

1. It is a proper duty of each chapter to take cognizance of the conduct of any member of the Guild within its jurisdiction and for any violation of the Bylaws, Regulations, and Codes to vindicate the law and administer justice. Provided: that the Guild officers are answerable only to the Council for acts growing out of their official duties.
2. The penal jurisdiction of a chapter shall extend over all of its members, wherever they may reside.
3. Offenses outside the jurisdiction of

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any chapter shall be heard and determined by the Board, whose findings shall be subject to proper appeal to final authority.

4. Failure to conform to the provisions of the Bylaws, Regulations, and Codes or denial of inherent rights thereof to a member or members, shall be cause for the revocation of a chapter charter.

Proposed I-B:
B. Jurisdiction

1. It is a proper duty of each chapter to take cognizance of the conduct of any member of the Guild within its jurisdiction for any violation of the Bylaws, Regulations, and Codes to vindicate the law and administer justice.
2. The penal jurisdiction of a chapter shall extend over all members of the Guild within its jurisdiction, as chartered, and over all of its own members wherever they may reside.
3. If a PTG officer or committee member is charged with an offense for an action stemming from his official duties, such charges shall be placed before the Member's Rights Commmittee, who shall conduct an investigation into the matter and report to the Council with their findings and recommendations.
4. Failure to conform to the provisions of the Bylaws, Regulations, and Codes or denial of inherent rights thereof to a member or members shall be cause for the revocation of a chapter charter.
5. In cases of overlapping jurisdiction of chapters, where the offenses are discovered or presented by a member of another chapter, the charges shall be placed before the president of the accused member's chapter in order that he may administer the situation. Only a member's own chapter has the right to hold a formal trial invoking the Disciplinary Code against the member.

Action 9C — II. Trial Procedures

1. Create a new section "A" as follows and re-letter subsequent sections:

Proposed II-A:
General Procedures

1. All procedures shall be followed as outlined in the PTG Trial Handbook. Copies shall be maintained by the PTG Home Office and shall be available to franchised members upon request. Before proceeding with filing charges, a current copy of the Handbook must be obtained for reference and guidance in the procedures.

Action 9D — II. Trial Procedures — A. Filing Charges

1. In II-A-4, insert "by registered mail, return receipt requested," between "known address" and "or handed."
2. In II-A-4, delete "or dropping from the rolls for dues delinquency."

Present II-A:
A. Filing Charges

1. All charges must be made in writing, signed by the member or members making them and specifying, with reasonable certainty, the character of the offense and the time and place of commission, to which shall be attached the names of witnesses, if any.
2. Any franchised member has the right to prefer charges within the chapter.
3. No member can be reprimanded, suspended, or expelled for any cause whatever, other than nonpayment of dues, except on written charges and specifications and after having received proper notice of trial.
4. Proper notice is hereby defined as written notice sent to the last known address, or handed to the accused by the chapter secretary, at least 10 days in advance of hearing or trial, or dropping from the rolls for dues delinquency.

Proposed II-B:
B. Filing Charges

1. All charges must be made in writing, signed by the member or members making them and specifying, with reasonable certainty, the character of the offense and the time and place of commission, to which shall be attached the names of witnesses, if any.
2. Any franchised member has the right to prefer charges within the chapter.
3. No member can be reprimanded, suspended, or expelled for any cause whatever, other than nonpayment of dues, except on written charges and specifications and after having received proper notice of trial.
4. Proper notice is hereby defined as written notice sent to the last known address by registered mail, return receipt requested, or handed to the accused by the chapter secretary, at least 10 days in advance of hearing or trial.

Action 9E — II. Trial Procedures — B. Setting the Trial

1. Delete II-B-1 since it is covered elsewhere and re-number subsequent paragraphs.
2. In II-B-2, add "on the chapter level" to the end of the present paragraph.
3. In II-B-3, insert "the chairman of the Member's Rights Committee, and the Regional Vice-President" between "All franchised members of the chapter" and "shall be given notice..."
4. In II-B-4, insert "by the chapter secretary" between "charge shall be laid" and "before the Guild President."
5. In II-B-4, insert "franchised" between "shall appoint a" and "member of the PTG."
6. In II-B-5, delete "if any, and" and capitalize the following "if."
7. In II-B-5, insert "it" between "whose duty" and "shall be to preserve..."
8. In II-B-5, delete "and" after "under the laws of the Guild" and capitalize the following "if."
9. Add two new paragraphs and number them "5" and "6." (see below)

Present II-B:
B. Setting the Trial

1. Trial procedure shall be prescribed in the Penal Code.
2. All charges must be heard and determined by the chapter. In no case can this be left to a committee.
3. Charges shall be presented at a stated meeting, read, and spread upon the minutes. The president shall set a time for trial and order the secretary to furnish the accused with true copy of the charges and specifications, together with the names of the witnesses, if any, and give him or her proper notice of the trial. All fran-

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chised members of the chapter shall be given notice of the time and place of trial by first-class mail at least 10 days in advance of trial date.

4. Should a chapter president be charged with an offense, the charge shall be laid before the Guild president, who shall appoint a member of the PTG to act as presiding officer in all matters having to do with the case at chapter level.
5. At the time set for trial, if the accused fails to appear, the presiding officer must make due inquiry and be satisfied that the accused has had proper notice of the trial, and copies of the charges and witnesses, if any, and if not, the trial must be continued to a future time. In either case, a member shall be appointed to appear for the accused, whose duty shall be to preserve to the accused every right under the laws of the Guild and, if the accused has had proper notice, the case shall then be heard and decided as though he or she were present.

Proposed II-C:
C. Setting the Trial

1. All charges must be heard and determined by the chapter. In no case can this be left to a committee on the chapter level.
2. Charges shall be presented at a stated meeting, read, and spread upon the minutes. The president shall set a time for trial and order the secretary to furnish the accused with true copy of the charges and specifications, together with the names of witnesses, if any, and give him or her proper notice of the trial. All franchised members of the chapter, the chairman of the Member's Rights Committee, and the Regional Vice-President shall be given notice of the time and place of trial by first-class mail at least 10 days in advance of trial date.
3. Should a chapter president be charged with an offense, the charge shall be laid by the chapter secretary before the Guild president, who shall appoint a franchised member of PTG to act as presiding officer in all matters having to do with the case at the chapter level.
4. At the time set for trial, if the accused fails to appear, the presiding officer must make due inquiry and be satisfied that the accused has had proper notice of the trial and copies of the charges and witnesses. If not, the trial must be continued to a future time. In either case, a member shall be appointed to appear for the accused, whose duty it shall be to preserve to the accused every right under the laws of the Guild. If the accused has had proper notice, the case shall then be heard and decided as though he or she were present.
5. All chapter trials shall be held in executive session. Members attending a chapter trial may themselves be subject to discipline for violating the secrecy of executive session. Only members of PTG in good standing shall be allowed to attend. Associate members in good standing shall be allowed to attend and shall have the privilege of debate, but shall have no vote. A majority vote of the franchised members in good standing who are present shall be required to allow the attendance of any other person(s). Any witnesses who are not members shall only be present for their testimony.
6. The trial record shall be considered the same as minutes of a meeting in executive session and shall be read and/or acted upon only in executive session. Exceptions shall be made in case of a member in good standing who was legitimately absent from the executive session and wishes to review the proceedings. No copies of the trial record shall be made except for those necessary for appeal. A member wishing to review the record shall obtain permission from the chapter. The trial record must be reviewed in the presence of the trial reporter at a mutually agreed upon time and place.

Action 9F — II. Trial Procedures — C. Pleading

1. Change section heading from "Pleading" to "Pleas."
2. In II-C-2, delete "Before proceeding to trial."

Present II-C:
C. Pleading

1. Should the accused appear and plead guilty to the charges and specifications, no further evidence is necessary unless the accused wishes to offer evidence in mitigation of the offense. This shall be permitted, after which evidence in rebuttal shall be permitted, after which penalty shall be fixed.
2. Before proceeding to trial in the absence of the accused, and after the charges are read, a plea of guilty must be entered upon the records.

Proposed II-D:
D. Pleas

1. Should the accused appear and plead guilty to the charges and specifications, no further evidence is necessary unless the accused wishes to offer evidence in mitigation of the offense. This shall be permitted, after which penalty shall be fixed.
2. In the absence of the accused, and after the charges are read, a plea of not guilty must be entered upon the records.

Action 9G — II. Trial Procedures — D. Duties

1. In II-D-1, insert "franchised" between "appoint a" and "member."
2. In II-D-2, insert "franchised member to serve as presiding" between "another" and "officer."
3. In II-D-3, delete "of not guilty."
4. In II-D-4, insert "or a witness" between "defendant" and ", in which case..."
5. In II-D-4, add "If the chapter secretary is not a franchised member, another trial reporter shall be appointed from among the franchised members of PTG."
6. Add a new paragraph "6." (see below)

Present II-D:
D. Duties

1. The chapter president shall act as presiding officer in all trials in the chapter or appoint a member to preside.
2. On request of the accused, the chapter president shall appoint another officer.
3. The presiding officer shall see that proper pleas of not guilty are entered for the accused and that the trial is properly conducted. The presiding officer shall decide as to the admissi-

bility of all evidence and testimony offered, and all points of law and order which may be raised.
4. The chapter secretary shall serve as trial reporter, except when the secretary is the defendant, in which case the chapter president shall appoint a trial reporter.
5. Any member of the Guild may act as counsel for the accused or the chapter.

Proposed II-E:
E. Duties

1. The chapter president shall act as presiding officer in all trials in the chapter or appoint a franchised member to preside.
2. On request of the accused, the chapter president shall appoint another franchised member to serve as presiding officer.
3. The presiding officer shall see that proper pleas are entered for the accused and that the trial is properly conducted. The presiding officer shall decide as to the admissibility of all evidence and testimony offered, and all points of law and order which may be raised.
4. The chapter secretary shall serve as trial reporter, except when the secretary is the defendant or a witness, in which case the chapter president shall appoint a trial reporter. If the chapter secretary is not a franchised member, another trial reporter shall be appointed from among the franchised members of PTG.
5. Any member of the Guild may act as counsel for the accused or the chapter.
6. The accused shall retain all rights and privileges of membership following filing of charges, including voting rights, until the verdict and sentencing ballots during the trial. The accused shall not be in the room for the deliberations and shall not vote.

Action 9H — II. Trial Procedures — E. Evidence

1. In II-E-1, delete "and" and capitalize the following "all."
2. In II-E-1, insert "be" between "tape, or" and "otherwise."
3. In II-E-1, delete ", which shall likewise" and replace with "and."
4. In II-E-2, delete the words from "The rules..." to and including "except that." Capitalize "no."
5. In II-E-2, add new sentence to end and also transpose one sentence from the present paragraph "5." (see below)
6. In II-E-3, change "Sworn affidavits" to "Written testimony."
7. In II-E-3, insert "if not having been provided to both parties 10 days prior to the trial date," between "when entered," and "shall on request."
8. In II-E-5, delete ";then" and capitalize the following "the."
9. In II-E-5, insert "then" between "accuser may" and "offer evidence."
10. In II-E-5, reposition the last sentence at the end of paragraph "2" while inserting "that" between "in mind" and "the rights."
11. In II-E-6, change "may" to "can" following "their credibility."

Present II-E:
E. Evidence

1. All written evidence must be preserved by the trial reporter and all oral evidence must be recorded on magnetic tape, or otherwise transcribed, which shall likewise be preserved, so that all evidence will be available in case of appeal.
2. The rules of evidence shall be, as far as applicable, the same as in the courts of law, except that no oath or affirmation shall be required of the witnesses.
3. Sworn affidavits may be presented as evidence but, when entered, shall on request of either party be grounds for continuance of the case in order to make proper rebuttal thereto.
4. When a member has been charged with a criminal offense and has been convicted of same in a court of law, a certified copy of the findings of the court in said cause shall be competent evidence and shall be considered with all other evidence in the case.
5. The accuser shall first enter all evidence to sustain the material allegations of the charges; then the accused shall introduce the evidence to disprove the charges or in mitigation of the offense; then the accuser may offer evidence in rebuttal and the accused may offer evidence in rebuttal, and herein evidence must close. The object of the trial is to get the facts and the greatest latitude should be allowed in receiving evidence, ever keeping in mind the rights of each side must be respected.
6. Witnesses may be presented who are not members of the Guild, provided they do so voluntarily, and their credibility may be properly established.
7. Immediately after evidence is taken, each side shall have the opportunity to be heard, the prosection having the right to open and close the argument. The accused shall then retire and a ballot shall be had on the guilt or innocence of the accused.

Proposed II-F:
F. Evidence

1. All written evidence must be preserved by the trial reporter. All oral evidence must be recorded on magnetic tape, or be otherwise transcribed, and be preserved, so that all evidence will be available in case of appeal.
2. No oath or affirmation shall be required of the witnesses.
3. Written testimony may be presented as evidence but, when entered, if not having been provided to both parties 10 days prior to the trial date, shall on request of either party be grounds for continuance of the case in order to make proper rebuttal thereto.
4. When a member has been charged with a criminal offense and has been convicted of same in a court of law, a certified copy of the findings of the court in said cause shall be competent evidence and shall be considered with all other evidence in the case.
5. The accuser shall first enter all evidence to sustain the material allegations of the charges; then the accused shall introduce the evidence to disprove the charges or in mitigation of the offense. The accuser may then offer evidence in rebuttal, and the accused may offer evidence in rebuttal, and herein must close.
6. Witnesses may be presented who are not members of the Guild, provided they do so voluntarily, and their credibility can be properly established.
7. Immediately after evidence is taken,

each side shall have the opportunity to be heard, the prosection having the right to open and close the argument. The accused shall then retire and a ballot shall be had on the guilt or innocence of the accused.

Action 9I — II. Trial Procedures — F. Verdict and Sentencing

1. Delete II-F-2 and replaced with new paragraph 2. (see below)
2. In II-F-3, change "specifications" to "charges."
3. Delete II-F-3-b.
4. In II-F-3-c, delete "for a definite time."
5. Add "of not more than $100" to II-F-3-d.
6. In II-F-4, insert "except that 2/3 shall be required to expel" between "decides the issue" and "If, however."
7. In II-F-4, change "none of the first four" to "none of the first three."
8. In II-F-4, change "If the accused be absent" to "If the accused is absent."
9. In II-F-4, add "from membership for a period of one year" to the end.
10. In II-F, delete the present paragraphs 5 and 6, and replace them with the new paragraphs 5, 6, and 7. (see below)

Present II-F:
F. Verdict and Sentencing

1. Only franchised members present shall vote on the question of guilt or innocence.
2. In case of multiple charges, each must be voted separately.
3. If the accused is found guilty as charged in one or more of the specifications, the membership shall fix one of the following penalties:
   a. Expulsion.
   b. Suspension, indefinitely.
   c. Suspension, for a definite time.
   d. Fine.
   e. Reprimand.
4. The vote shall be taken in the above order until a majority decides the issue. If, however, none of the first four are decided upon, the accused shall automatically be subject to reprimand. If the accused is present the presiding officer shall proceed to administer the reprimand. If the accused be absent, he or she shall be properly notified to appear at a set time for reprimand and, should he or she fail to appear at such time or show a satisfactory excuse for non-attendance, shall stand suspended.
5. Should suspension for a definite time be fixed as a penalty, the time may be fixed by motion and vote, but the longest time proposed must be voted first.
6. In cases tried by the Executive Board, the Board will hold trial, determine guilt or innocence, and fix penalties in accordance with the above section.

Proposed II-G:
G. Verdict and Sentencing

1. Only franchised members present shall vote on the question of guilt or innocence.
2. Each specification must be voted by secret ballot, followed by each charge, on separate ballots.
3. If the accused is found guilty as charged in one or more of the charges, the membership shall fix one of the following penalties:
   a. Expulsion.
   b. Suspension.
   c. Fine of not more than $100.
   d. Reprimand.
4. The vote shall be taken in the above order until a majority decides the issue, except that 2/3 shall be required to expel. If, however, none of the first three are decided upon, the accused shall automatically be subject to reprimand. If the accused is present, the presiding officer shall proceed to administer the reprimand. If the accused is absent, he or she shall be properly notified to appear at a set time for reprimand and, should he or she fail to appear at such time or show a satisfactory excuse for non-attendance, shall stand suspended from membership for a period of one year.
5. Should a fine be fixed as a penalty, a vote shall be taken on the amount of the fine as well as on the time limit for payment. If the member does not meet the payment deadline, the unpaid amount shall be considered as a delinquent fee and be handled the same as a dues delinquency. (See BYLAWS, VI-3)
6. Should suspension be fixed as a penalty, the time may be fixed by motion and vote, but the longest time proposed must be voted first. Notification shall be sent promptly to the Member's Rights Committee and the PTG Home Office. From the date of the trial until the expiration of the suspension, all rights and privileges of the member shall be discontinued with the exception of any PTG insurance programs. Dues shall not be assessed during the time of the suspension. Money paid in advance will be rebated on a pro-rated basis. At the end of the suspension, the member shall be reinstated into his or her previous membership category, without any additional application fees or examinations, upon payment of current pro-rated dues.
7. Should the defendant be expelled, notification shall be sent promptly, along with the person's membership number and effective date of expulsion, to the Member's Rights Committee and the PTG Home Office. All membership rights and privileges shall be terminated as of the expulsion date with the exception of any PTG insurance programs, which shall terminate at the end of the appeal process. Dues paid in advance shall be rebated to the former member on a pro-rated basis. A member who has been expelled may apply as a new member after five years from the date of the trial.

Actions 9J-9M — III. Appeal and/or Retrial

1. Delete the present section A and replace with the new sections A, B, C, and D. (see below)

Present III-A:
A. Appeals

1. A chapter may grant a new trial on the ground of newly discovered evidence which would indicate, with reasonable certainty, a change in the findings.
2. One who has been convicted in a chapter or Board trial shall have the right to appeal the case within 60 days after conviction to the Member's Rights Committee sitting as a court of appeal and review.
3. An appeal shall be in writing and contain a statement of the case and the exception taken to the decision or judgement appealed from, and the

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ground upon which an appeal is based.

4. An appeal shall be placed in the hands of the chairman of the Member's Rights Committee who shall make arrangements with the Committee to review the case at its earliest opportunity. All records and recordings of an appealed case shall be turned over to the chairman of the Member's Rights Committee for use by that committee.
5. One who has been convicted in a chapter or Board trial and has completed an unsatisfactory appeal with the Member's Rights Committee shall have the right to appeal the case to the Council within 60 days after the end of the review by the Member's Rights Committee.
6. An appeal shall be in writing and contain a statement of the case and the exception taken to the decision or judgement appealed from, and the ground upon which the appeal is based.
7. An appeal shall be placed in the hands of the Guild recording secretary who shall inform the president, who will make arrangements for the Council to review the case at its earliest opportunity. All records and recordings of an appealed case shall be turned over to the Guild recording secretary for use by the Council.
8. The final authority in all matters of jurisprudence shall be the Council, sitting as a court of appeal and review. It shall review the evidence taken in previous trials of the case and shall have the right to summon and question witnesses, if deemed expedient to the exercise of justice. It may also consider new evidence.

9J - Proposed III-A:

A. Appeals to Member's Rights Committee

1. One who has been convicted in a chapter trial shall have the right to appeal the case within 60 days after conviction to the Member's Rights Committee sitting as a court of appeal and review.
2. An appeal shall be in writing and contain a statement of the case, the exception taken to the decision or judgment being appealed, and the grounds upon which an appeal is based.
3. An appeal shall be placed in the hands of the chairman of the Member's Rights Committee who shall make arrangements with the Committee to review the case at its earliest opportunity. All records and recordings of an appealed case shall be turned over to the chairman of the Member's Rights Committee for use by that Committee.
4. The Member's Rights Committee shall review the trial to verify that proper procedure was followed and that the member's rights were not violated. The Committee shall not hear new evidence.
5. The Member's Rights Committee shall either uphold the chapter decision or require a new trial to be held on the basis of improper procedure. The Committee cannot alter, or require to be altered, a verdict or sentence. The Committee can attest to improper procedure and may recommend further appeal.
6. A report from the chairman shall be due within 60 days of receipt by the Committee members of all materials requested. Copies of said report shall be sent to the accused, the chapter president, the trial reporter, the PTG Executive Board, and the PTG executive director.

9K - Proposed III-B:

B. Appeals to the Executive Board

1. One who has been convicted in a chapter trial and has completed an unsatisfactory appeal to the Member's Rights Committee shall have the right to appeal the case to the PTG Executive Board within 60 days after the filing of the report of the review by the Member's Rights Committee.
2. The appeal must be in writing and contain a statement of the case, the exception taken to the decision or judgment being appealed, and the grounds upon which the appeal is based.
3. The appeal shall be placed in the hands of the PTG Secretary-Treasurer who shall inform the President. The President will make arrangements for the members of the Executive Board to review the case at their earliest opportunity. All records and recordings of an appealed case shall be turned over to the PTG Secretary-Treasurer for use by the Executive Board.
4. A report from the Executive Board shall be made to the member(s) involved, as well as the Member's Rights Committee and the Council.
5. If the accused member or PTG chapter wishes to appeal a decision made by either the Member's Rights Committee or the Executive Board, or wishes to present new evidence, they shall have the right to do so in person at a scheduled Executive Board meeting. It shall be the member's responsibility to notify the PTG Secretary-Treasurer of such intention. The Executive Board may postpone such a hearing until the next scheduled session if notice of said intention is received less than 60 days in advance.
6. Members requesting an Executive Board hearing shall be responsible for their own transportation costs, lodging, etc. If such a hearing is to be held, all parties involved shall be notified as soon as possible of the date, time, and place of same. The chairman of the Member's Rights Committee shall be summoned, at PTG expense, in order to testify as to the Committee's findings.

9L - Proposed III-C:

C. Appeals to Council

1. The final authority in all matters of jurisprudence shall be the Council, sitting as a court of appeal and review. Council shall not be required to hold a new trial, but the body shall review the evidence taken in previous trials of the case. Council may also consider new evidence. Council shall have the right to summon and question witnesses if to do so is deemed expedient to the exercise of justice.
2. One who has completed an unsatisfactory appeal to the PTG Executive Board shall have the right to appeal the case to Council. Such an appeal shall be placed in the hands of the PTG Secretary-Treasurer within 30 days following the receipt by the member of the report of an unsatisfactory review by the Executive Board.
3. Council appeals shall be held in executive session.
4. A person entering an appeal to Coun-

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The Soundboard

Letters from readers on original matters will be published in this space each month. Letters should concise and may be edited for length and style. Send letters to: Soundboard, 4510 Belleview, Suite 100, Kansas City, MO 64111.

To the Soundboard:

This year's NAMM show provided little that was new in the piano industry. Susan Graham will be reporting on the technical features of new pianos. What was new and exciting was a meeting that Larry Goldsmith and I attended at the show. This meeting consisted of the heads of various organizations in the piano industry: Bob Dove, president of Piano Manufacturers International; Don and Brenda Dillon, executives of the National Piano Foundation; Richard Morris and Bob Elias, president and executive director of Music Teachers National Association; Richard Chronister, executive director of the National Piano Pedagogy Conference; Karl Bruhn, Director of Market Development for NAMM; and Larry Goldsmith and myself. This meeting was conceived and called by the Dillons with the idea that we get all these groups together to brainstorm what we can all do to help each other support promotion of the piano.

The group focused on two main issues. In order to promote the piano we need to get new people interested in playing and to minimize the dropout rate of those who are already playing. While manufacturers, dealers, teachers, and technicians are competing for their section of the pie that makes up our market, these efforts could increase the size of the whole pie.

The Piano Pedagogy Conference, which is an organization of those teachers who train piano teachers, is most concerned about what causes people to drop out. Besides the problems of poor teachers they also identified students playing on poor pianos as a problem. Many teachers are not aware of the condition of their students' pianos. This group was not aware of our pamphlets and video. They will be promptly provided with copies. Another problem is that parents of piano students do not know how much to expect their children to be able to achieve through their piano lessons. In the bowling industry they found that breaking 100 was the marking point that made people consider themselves a bowler. After that accomplishment they would buy shoes and a ball and join a league. Teachers need to define a similar milestone for piano teaching. Toward this end, the Pedagogy Conference is developing a new magazine, *Keyboard Companion*, aimed at teachers of beginning students and their parents. While they have the resources to produce this magazine, the PTG could be helpful in getting word of the magazine to the target audience. We are in touch with many teachers who are not members of any teaching organization.

Technicians are often called upon to recommend a good teacher. While I have a good idea of who the better teachers are in my area, MTNA has pamphlets on how to select a teacher. This could be useful for us to have on hand.

Each organization offered space in its magazine for articles by others in the network. Understanding the interests and needs of each part of the industry is the first step in working toward a common goal.

The National Piano Foundation has developed some beautiful videos about the joys and benefits of playing the piano. Some of those have been distilled into 10, 20, and 30-second Public Service Announcements. The NPF is working to get these out to TV stations. Perhaps we can be of help in promoting these videos and their other excellent literature. NPF's address is: National Piano Foundation, 4020 McEwen, Suite 105, Dallas, TX 75244-5019.

Some rather discouraging figures were presented by Karl Bruhn about advertising. According to Karl, the total amount of money spent on advertising in the U.S. last year came to $480 per each man, woman, and child in the U.S. He announced that NAMM had budgeted $1 million for its piano popularization program. This $1 million amounts to .245 cents per person. You can see that even with what seems like large resources, the whole industry is not going to make progress with a massive advertising campaign. We must be more creative and take the rifle approach. The fact that we are promoting music gains us a door for free public service announcements.

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Dates & Deadlines

June 16-17, 1990
RTT Tuning and Technical Examinations. California State University, Long Beach, CA. Contact: Carl Lieberman (213) 392-2771

July 7-11, 1990
33rd Annual Convention & Technical Institute. Hyatt Regency Dallas. Contact: Home Office; 4510 Belleview; Suite 100, Kansas City, MO 64111; (816) 753-7747.

August 18, 1990
RTT Tuning Examinations. Central Illinois Test Center. Millikin University; Decatur, IL. Contact: John Baird (217) 429-5651

RT Membership Study Report

Mitch Kiel
Committee Chair

The Argument For Change

In 1986, PTG did away with the membership categories "Student," "Allied Tradesman," "Apprentice," and "Affiliate." All were replaced with the single category "Associate." However, there is still concern for the rebuilders, or the "Skilled Non-Tuning Technicians" (let's call them SNTTs) who in the past may have been "Allied Tradesmen." These members, venerable and valued, are now classified "Associates," along with beginners, hobbyists, and piano retailers. Should SNTTs who have more in common with RTTs than with their fellow "Associates," be reclassified to reflect their true professional status?

Some History

Council restructured membership categories in 1986 because joining PTG had become a bureaucratic jungle. Applicants had to wait an unnecessarily long time before enjoying the benefits of Guild membership. The public was being confused with too many classifications. Legal advice on restraint of trade and advertising rights required action.

From 1984 to 1987, there was a blue ribbon committee chaired by Kevin Leary, RTT, called the Rebuilding Standards Committee. It tried to come up with a way to certify rebuilders. After three very long years of work, they concluded the difficulties were insurmountable, and that PTG should abandon the effort.

Last Year's Council Actions

At the 1989 Council session, a proposal was submitted by the Central Illinois and Salt Lake City chapters. It suggested the creation of a fully franchised member category for SNTTs called "Registered Technician" (RT). Applicants would take the present written and technical exams, but not the tuning exam. This proposal was withdrawn.

Also at the 1989 Council session, the Seattle Chapter submitted an RT proposal. It suggested definitions and skill qualities that the potential RT should fulfill. The chapter membership would first vote whether a candidate fits those definitions. If he/she survived the chapter vote, the candidate would then take the present written and technical exams, but not the tuning exam. These Associates who are neither RTTs nor RTs would be re-named "Provisional" members. This proposal was withdrawn.

Instead, Council created the RT Membership Study Committee. This is our report.

What's The Problem?

Let's assume our goal is to give recognition to SNTTs who have no intention of tuning, but are as skilled and as worthy as RTTs. (There are ways to safeguard against those who fail the RTT tuning exam to use the RT route to gain professional status "on the cheap.")

Many believe it to be impossible to implement an RT test that includes examining a rebuilt piano. The hard questions remaining that we need to answer are:

- Should we (re)create the RT category if we cannot inspect a piano rebuilt by the applicant?
- What kind of RT exams remaining would be practical, fair, and

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This was an exciting meeting. The ideas and energy generated encouraged me to put together a similar meeting on a local level. Perhaps NPF may want to develop chapters to do just this sort of thing. My thoughts were reconfirmed that we are all working toward the same goals and that working together will get us further than working separately.

Ron Berry

To The Soundboard:

In reference to the February *Journal*, Jesse Lyons makes the point that pounding on keys to set tunings might be overdone. I certainly agree. It's the old story — a little works, so more is better.

On the few occasions when I have gotten all excited about key pounding after reading a pep talk in the *Journal*, I have broken strings on pianos that have never had broken wire before.

Key pounding to extremes puts us in the same category as the church pianists with their heavy gospel music — look what happens to those pianos.

Solid tunings can be accomplished with proper hammer technique and excessive key pounding may be an attempt to overcome improper hammer technique.

Gerald Foye
San Diego, CA Chapter

Membership Status By Region

Northeast Region	818
Northeast RTTs	535
Southeast Region	573
Southeast RTTs	389
South Central Region	311
South Central RTTs	209
Central East Region	617
Central East RTTs	396
Central West Region	360
Central West RTTs	252
Western Region	597
Western RTTs	407
Pacific NW Region	331
Pacific NW RTTs	228
Total Membership	3607
Total RTTs	2416

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accurate?
•Can we, and should we, insure that entry level RTs are relatively equal to entry level RTTs?

Analysis Tools

•There may be some agreement that certain SNTTs deserve recognition by PTG. But that is not the problem we need to solve here. The real fulcrum of this issue is the *mechanism* we create to qualify persons for RT status. The implementation of an RT category needs to pass muster, not the concept. Well-meaning intentions are wasted without a detailed plan of action.

•The Leary committee could find no way to certify rebuilders. Perhaps their problem was they tried to create a fully comprehensive exam with expert level standards. The proposed RT category aims to establish *minimum* standards by sampling representative skills, which is exactly how RTTs are tested today. Both RTT and RT should be thought of as fraternal twins, non-identical but with equal relative abilities. This implies there should be close parallels between both exam processes.

•The Seattle proposal has been revised. It now suggests administering the present written and technical tests, followed by a review by CTEs, newly trained as Certified *Technical* Examiners, to ascertain whether the applicant fits published RT definitions and criteria. Those definitions and criteria are not yet fully written.

•There is probably a very small group of people out there who would qualify as RTs. Does that lessen the importance of "equal rights for equal skill?" Or is the number of affected members, and their true level of concern, too small to warrant the hundreds, perhaps thousands, of volunteer hours required to implement this idea?

•Let's also acknowledge inconsistencies in how all Associates are presently treated across the country. Some chapters allow Associates to vote on chapter-level decisions only. Those Associates cannot vote on any national matter, such as those which might appear before Council. Subjects excluded include, but are not limited to, PTG national Bylaws or national Code of Ethics. This partial enfranchisement has proven in many cases to be a successful compromise. Associates who are potential RTs seem to appreciate this type of expanded voting power, and for some, this is all the added recognition they want.

•Carl Root, RTT, of the Economic Affairs Committee is in the process of conducting a wide-ranging demographic survey of PTG members. Included are questions on the Associate and RT categories. Hopefully the results of that survey will shed light on the RT question.

Pro RT Arguments

•SNTTs are the peers of RTTs, and therefore should have equal recognition and equal rights.

•The public would not be confused or aware of this change, since many customers go through an RTT referral to get to an RT. Besides, overall public awareness of PTG is low.

•The important difference between Allied Tradesman and RT is that RTs will be tested, and therefore fit for full enfranchisement.

•Presently, SNTTs want to advertise PTG membership, but hesitate because their status as Associate does not accurately describe their talents.

•The Seattle RT proposal contends there are too many labels used by RTTs. "Registered Tuner-Technician" only is correct, and everyone should use that term. Then, the term "Registered Technician" will not be confusing. On the contrary, it intentionally implies a similarity of professionalism.

•Defining and recognizing good technical work is to everyone's benefit. Just like PTG had to define a professional piano tuning when we created the tuning exam, so too should we take this opportunity to define standards of touch and tone.

Con RT Arguments

•The Salt Lake City and Kansas City proposal is not complete enough. There has to be something to take the place of the missing tuning exam.

•The term "RT" is too similar to "RTT," and will be confusing to the public.

•What difference is there between the low status terms "Provisional" and "Student?" Between "RT" and "Allied Tradesman?" Isn't this really a return to the old membership policies?

•The number of potential RTs is too small to create all this bureaucracy.

•The only way to properly test rebuilding skill is to examine a rebuilt piano. Any other method is unsatisfactory.

•The most significant objection to the revised Seattle RT proposal is this: An applicant's compliance with definitions is most fairly accomplished in a test setting, not by a CTEs subjective judgment. It would be unfortunate if a post-test review by CTEs was a return to the old-boy network of back room favoritism. CTEs should remain test administrators, not judges. If RTs are to be peers of RTTs, then the RT exam should parallel the RTT exam. Tests are the way we now accomplish this. Definitions and standards are useful, but their correct application is within an exam process.

Conclusion

•The RT Membership Study Committee's year of work has resulted only in a better definition of the problem. More time is necessary to find a solution.

•If, and only if, an acceptable exam for RTs can be devised, we should welcome these qualified

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Meet Your Board Members

Lisa Gray
Assistant Editor

Steve Brady

Pacific Northwest RVP Steve Brady has made a lifetime career of piano technology. He began playing at the age of eight, and remembers being "fascinated with the piano mechanism." One of the reasons he got into tuning was his frustration with the poor condition of most pianos he came across.

Brady

After earning a degree in Piano Technology from Brigham Young University, Steve joined PTG in 1973. He lived in Arizona for five years, working for a technician with a large business, and later purchasing that business and running it for three years himself.

His current job at the University of Washington keeps him busy with 100 pianos, half of them grands and half verticals. He tunes for concerts, recitals, and teaches a class in piano technology for piano majors.

Steve's wife, Judith Cohen, is a concert pianist. Together they started the Governor's Chamber Music Festival in Olympia, WA. When they began talking to people about this idea, some thought it impossible. Steve and Judith persevered until they found people who shared their energy and optimism. They modeled the festival after some successful ones they had seen, and have also done the organizing, promoting and fund raising.

At one of the festival performances there was a man who had never heard a live violinist. Steve recalls, "He was so moved by it, he donated $500 to the festival! I am sure there are other people out there who have not been exposed to live music."

"In the PTG Code of Ethics it says,'Contribute to the vigor of musical life and activities in the communities you serve,'" Steve notes, "I have found if you put the energy out, it comes back to you in more ways. It's good for your business and the general public awareness. It all helps."

One avocation Steve has is writing computer software. He has created a system for appraising pianos and marketed it at the Portland convention. Another is poetry and writing, which Steve says were his first love. He went to college on an English scholarship, but decided against it for a career. Besides the articles he writes for the *Journal*, he has published a number of poems in poetry journals and periodicals. In the last five years he has won several state poetry contests. One of his poems won first place in the national *DeLong Quarterly Poetry Review* contest. Steve sees poetry as a great tool for self-discovery.

Serving on a city council and the board of directors of its county-run bus company, Steve learned a lot about the way government and people work. He has shared this knowledge with the Guild by running two terms each as president for the Phoenix and Seattle Chapters, and putting together regional seminars. He was elected RVP at the Portland convention, and says he has enjoyed this position very much. "I like the feeling of doing something to contribute to the Guild. I like meeting people in various chapters, and have had the oppor-

RT Study...

fellow piano service professionals into PTG.

•It is simply impractical to have each RT examinee rebuild a test piano. But there needs to be an expansion of the RT exam process to replace the tuning exam. The written exam, and possibly the technical exam, seem to be the best avenues. No judgment can be made until there exist accurate definitions of what skills an RT should possess and corresponding written/technical exam questions. These questions should be difficult enough so an 80 percent passing grade produces RTs who are as relatively skilled as RTTs.

•The present policy of allowing individual chapters to decide on Associate enfranchisement for chapter level decisions is inconsistent but acceptable. PTG should wait until completion of the RT Study before deciding this issue. PTG should also wait on other questions, such as forcing Associates to eventually take an RT or RTT exam, or creating a "Friend of PTG" category for hobbyists and professional courtesy memberships.

•Consistent use of the correct term "Registered Tuner-Technician" should be non-coercively encouraged.

Recommendations

•The 1990 Council should decide whether the RT Membership Study Committee perseveres for another year. Plans are to create an RT exam by continuing to expand the number of participants involved, including the Examinations and Test Standards Committee and ex-members of the Leary committee. Chairmanship of the RT Membership Study Committee should be transferred to committee member Bernard Mollberg, except that he is an Associate, and therefore ineligible.

Mitch Keil, RTT Chairman
Bernard Mollberg, Associate
Ken Hannah, RTT

Board Members...

tunity to help some individual members. I find this very satisfying," says Steve.

Fern Henry

There are a number of positive things about the Piano Technicians Guild. Western Regional Vice President Fern Henry is one of them.

Fern recognizes how much PTG has changed since she joined. She says, "PTG seems to be a more sophisticated organization than when I began. We continue in raising standards, inspiring members to do higher quality work, and enhancing the profession of the piano technician. The overall track record and progress is very positive."

The Sacramento Valley Chapter has more than tripled its membership since Fern joined it in 1977. She thinks it is "wonderful to be a part of this kind of growth," and has contributed to that growth by holding every chapter office at one time or another.

Before entering the field of piano technology, Fern earned a Masters Degree in social work from the University of California at Berkely. She worked four years in the helping profession, but decided this was not what she wanted for the rest of her life. With this experience, and growing up as a minister's daughter, Fern has a strong background of communication and human dynamics.

This background helped her in writing the "Basic Skills" series of articles in the *Journal* with her husband, Bill Spurlock. In working on revisions to the PTG technical test, they saw a need for material dealing with the basic skills, which they feel are the most important.

"We try to emphasize dignity in doing the little things. Nothing is too small as to not deserve your attention. Not having much exposure to concert tuning and big grand pianos ourselves, we try to bring professional standards to more humble pianos and clientele," says Fern.

Another way Fern has contributed to the Guild is teaching at the local, state, regional, and national levels. She was chairman of the California State Conference for two years. About her contributions to the Guild, she says, "It has given me an opportunity to grow in unexpected ways such as teaching and leadership roles. These opportunities are normally not so readily available to self-employed persons. My involvement and growth have translated into business success."

Serving on the Teacher Relations Committee was a real learning experience for Fern, who took primary responsibility for putting together the "Teacher Relations Handbook." Fern recalls, "Working on this committee is where I became aware of other organizations and broadened my outlook in the piano industry."

Henry

On the subject of promoting the piano, Fern thinks, "Our best bet in PTG is to take a very broad view of the music industry. We need to fully realize the importance of communication with teachers, manufacturers, and dealers; and to emphasize cooperation and common concerns, rather than focusing on our conflicts and tensions." She believes the more broadly you tackle promotion of the piano, the better.

For the last couple of years Fern has been working with local groups to bring more music into their community and develop more of an audience for live music. One example of this is her work with a local museum organizing an American music concert series. Accompanying, performing, organizing and producing keep her busy as she uses her talents and contacts from tuning to promote music.

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cil must present his case in person. After said presentation, rebuttal shall be heard from the chapter or its representative, followed by a report by the chairman of the Member's Rights Committee. A representative of the Executive Board shall then report on the findings of that body. Questions from the floor will be entertained. Council will then debate the issue and may limit the time of debate.

9M - Proposed III-D:
D. Retrials

1. A chapter may grant a new trial on the grounds of newly-discovered evidence which would indicate, with reasonable certainty, a change in the findings.

Comment: The Bylaws Committee recommends adoption of Actions 9A through 9M.

Exams To Be Offered At Convention

If you're an Associate member who needs to take the Guild tuning examination to become a Registered Tuner-Technician, an excellent opportunity will be available during the Convention and Technical Institute in Dallas, TX, this July.

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

Only a limited number of exam slots are available, so be sure to apply early. To apply for a convention exam slot, complete the form on this page and send it to: (for tuning exams) Michael Travis, P.O. Box 576, Greenbelt, MD 20770; (for technical exams) Mike Carraher, 1502 Mill Road, Elizabethtown, PA 17022.

A $60 application fee payable to "Piano Technicians Guild" is required for applicants for RTT status.

The deadline for applications is June 23, and application fees are non-refundable after that date.

Application For Convention Technical Exam

Applicants for RTT status must enclose the $60 application fee. Make check payable to "Piano Technicians Guild" and send check and this application to **Mike Carraher, 1502 Mill Road, Elizabethtown, PA 17022.** The deadline is June 23. Fees are non-refundable after June 23.

Name: _____

Phone: _____

Address: _____

City, State, Zip: _____

Enclosed is: $60 fee ___

Signature: _____

Application For Convention Tuning Exam

Applicants for RTT status must enclose the $60 application fee. Make check payable to "Piano Technicians Guild" and send check and this application to **Michael Travis, P.O. Box 576, Greenbelt, MD 20770.** The deadline is June 23. Fees are non-refundable after June 23.

Name: _____

Phone: _____

Address: _____

City, State, Zip: _____

Enclosed is: $60 fee ___

Signature: _____

Examiners Needed For Tech Exams At Convention

Bill Spurlock
Chairman, Technical Exam Subcommittee

Technical exams will be offered at the annual PTG Convention in Dallas and examiners are needed. We would like to make use of this event not only to accomplish some testing, but to train examiners. If you have experience as an examiner, or would like to learn how to set up and administer the new exam, your help would be appreciated. This will be an opportunity to work beside an experienced examiner, to find out how the exam works and what the props look like, and to help the Guild fulfill this important function. Each exam session will run 3 1/2 to four hours, and examiners are welcome to participate in one or more sessions during the convention.

No prior examining experience is required; however, if you plan on helping, I recommend that you obtain a copy of the new PTG Technical Exam from Home Office ahead of time and read through it, and read my article titled "Setting Up The PTG Technical Exam..." in the March 1989 *Journal Update* section. In addition, plan to attend my class in Dallas on how to administer the technical exam.

If you would like further information, or have questions of any kind about the Technical Exam, feel free to contact me.