

PIANO TECHNICIANS
Journal
March 1994

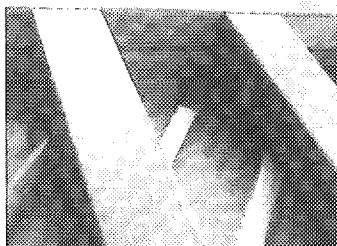
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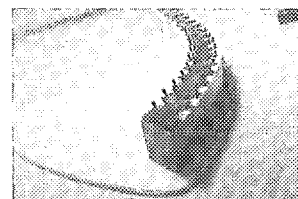


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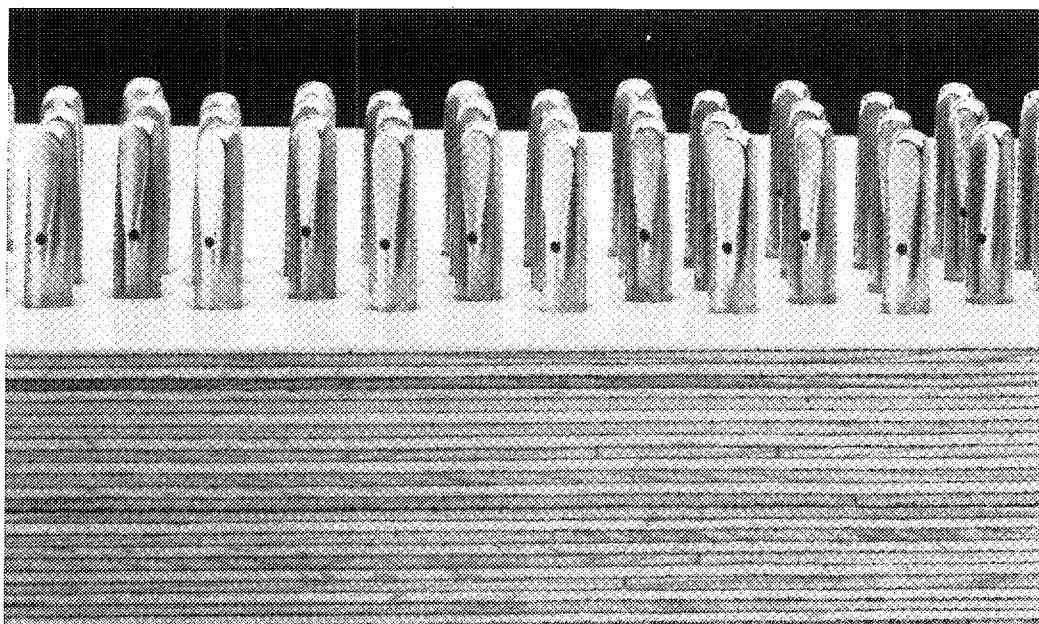
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6 • President's Message

COUNCIL PREVIEW

Fern Henry, RPT
President

10 • Technical Forum

AS PROMISED:
SOME NEAT NEW TOYS!

Jim Harvey, RPT
Editor

14 • PACE Technical Lesson #7

HAMMER FILING, PART II

Bill Spurlock, RPT
Sacramento Valley Chapter

19 • PACE Tuning Lesson #7

TUNING 2:1 OCTAVES

Michael Travis, RPT
Washington, D.C. Chapter

21 • Tuner's Corner

INTERPLAY OF INTERVALS

Michael Kimbell, RPT
Contributing Editor
San Francisco Chapter

27 • Feature Article

THE KEYS TO SUCCESS

Bob Bartnik,
Richmond Chapter

CoverArt

Whazzit? Although this may look like an after-market kit for turbo-charging your barbeque grill, it's actually two useful piano shop tools. See the Forum for more pictures and details.

34 • Technostuff

LOST MY GRIP

Richard Anderson, RPT
Feature Writer
Chicago Chapter

35 • The Tuner

MUTING THE PIANO

Paul Monroe, RPT
Orange County Chapter

39 • Your Business

SERVICE MANAGEMENT

Willem Bles, RPT
St. Louis Chapter

Also Inside:

'94 INSTITUTE UPDATE • 8

You Say Symposiums, I Say Symposia
Steve Brady, RPT
1994 Institute Director

LEFT FORK • 38

Benches
Ron Nossaman, RPT
Wichita Chapter

GUEST FEATURE • 42

Dr. Keyboard Or How I Learned To Stop
Worrying & Love Algebra
Margie Williams, RPT
San Francisco Chapter

INTERNATIONAL RELATIONS • 44

1993 European Tour—Part 3
Greg Hudak, RPT
Baltimore Chapter

FOUNDATION SPOTLIGHT • 43

EVENTS CALENDAR • 46

AUXILIARY EXCHANGE • 48

MEMBERSHIP • 50

CLASSIFIEDS • 51

DISPLAY AD INDEX • 54

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

Our engineers are obsessed with the little things because they recognize the importance of attention to detail. But lately, they've become equally obsessed

stability, and offers a longer soundboard lifetime. We're so pleased with this new design, we're now incorporating it into all our grand pianos.

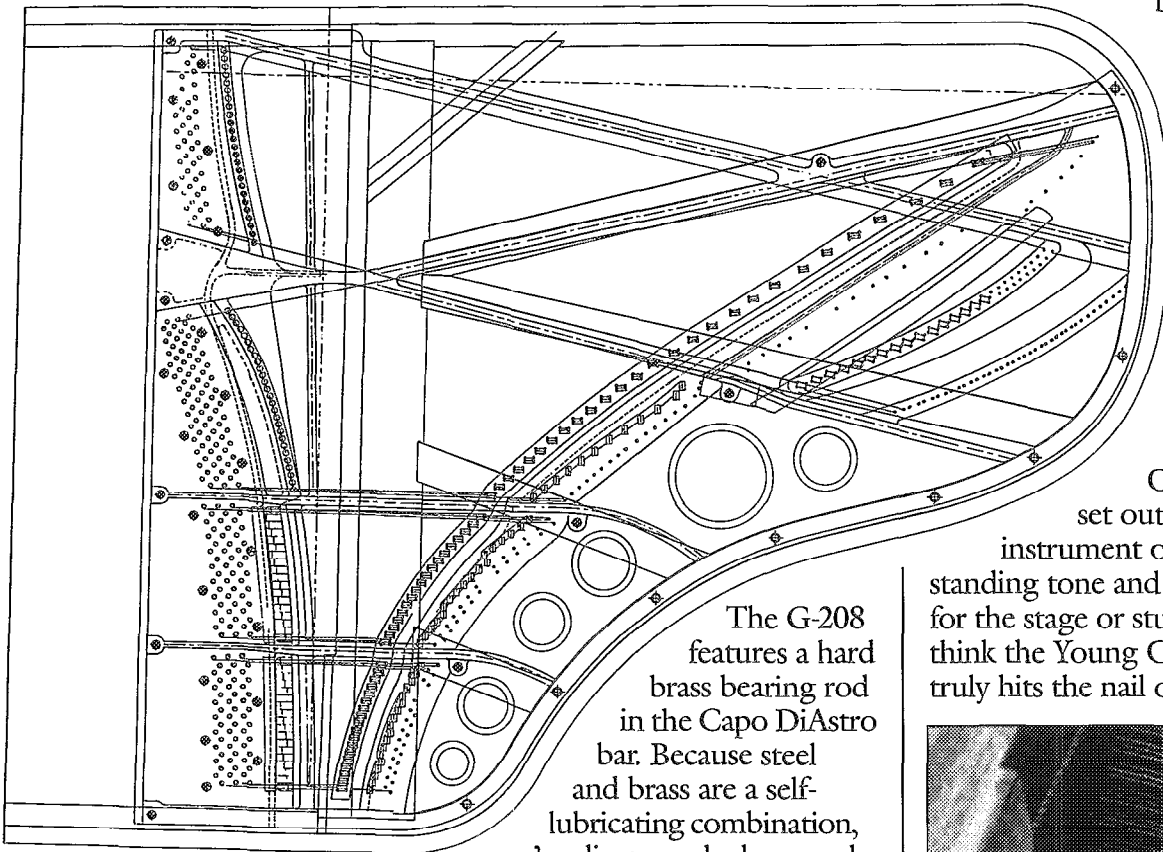
then terminated in equal length offering improved sustain, projection and clarity.

Together these innovations create an instrument with a rich,

full sound,
greatly
improved
response
and a
remarkable
evenness
of tone
through-
out the
entire
range
of the
keyboard.

Our engineers
set out to design an

instrument offering outstanding tone and performance for the stage or studio. And we think the Young Chang G-208 truly hits the nail on the head.



The G-208 features a hard brass bearing rod in the Capo DiAstro bar. Because steel and brass are a self-lubricating combination, we discovered a brass rod

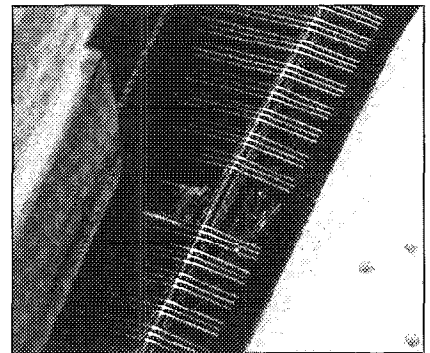
with big things, and the result is 6'10" long. Our new G-208 grand is a departure for us and represents the smallest and largest of our latest innovations.

The G-208 is a 6'10" grand piano of an entirely new scale design. It features our new "Asymmetrically Crowned" soundboard which places the highest part of the crown in each rib directly under the bridge providing maximum support under the downbearing pressure of the strings. This new soundboard design exhibits improved power, projection and tuning

offers better control of strings during tuning. In addition, the brass rod is easily replaced later in the life of the instrument eliminating the need for reshaping of the capo bar.

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Our new double duplex system terminates the strings at the rear of the bridge and near the tuning pins with duplex bars. Both duplex lengths of the strings for each note are



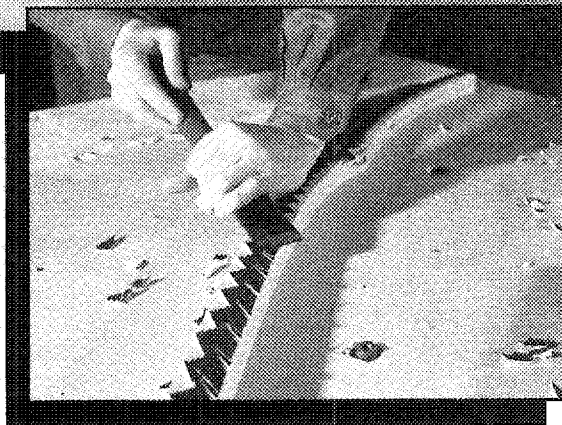
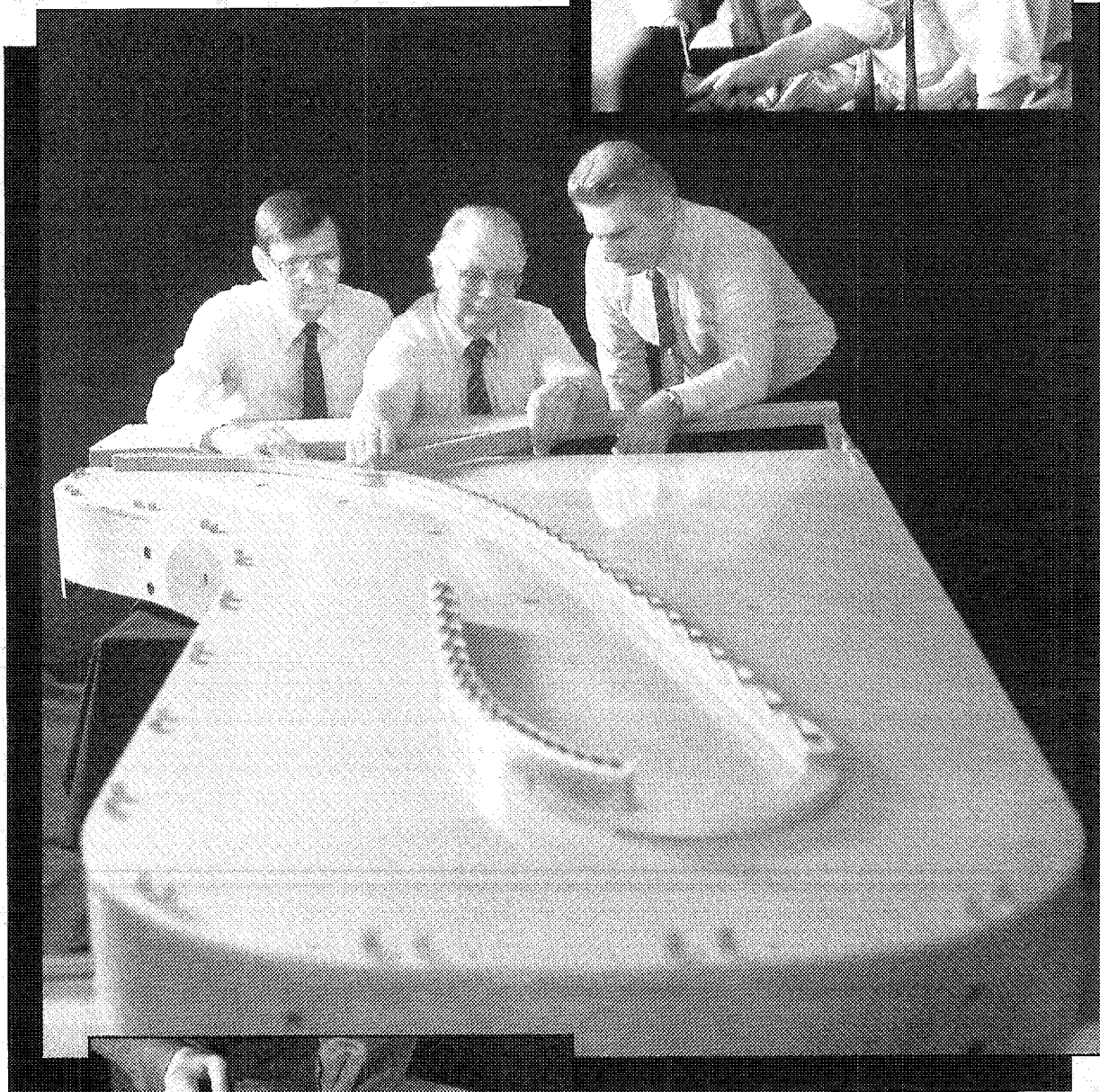
Because strings bear against a replaceable brass rod, tuning control is improved.

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

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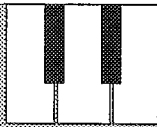
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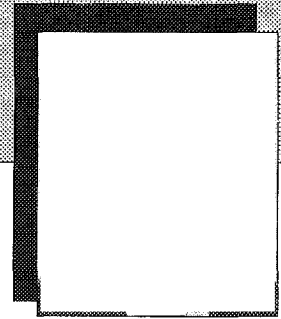
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Council Preview



In the spring, a young man's fancy, they say, turns to love. In PTG, where we are more sedate, our thoughts turn toward the upcoming Council session! Council will meet this July 5 and 6 in Kansas City. The formal agenda book will be sent to delegates next month for each chapter to consider and debate. However, to get your thinking started early, here is a short list of some issues council will face.

- The Board will present a Resolution on Education Goals for Council consideration; Council will be asked to identify what PTG's goals are and then consider strategies for getting there. This debate is very important for our future. It is the job of Council to set the policy direction for the organization; by working together on the resolution and strategies, we will take our destiny in hand. To witness a serious Council debate on PTG's priorities and plans has been my cherished goal as President; I am eagerly anticipating your participation.

- The Ethics Committee has worked for two years to produce a new PTG Code of Ethics. Their goal was to take our list of Member Obligations, Rules of Business Conduct, and Code of Ethics, which are now three separate lists, and combine and update them into one concise and meaningful code. David Duncan and his committee have worked carefully and thoroughly at the task. If Council decides to pass this new Code, PTG can promote it more effectively to our members and the public. Our current three codes are so lengthy that they are difficult to feature.

- The voting rights of Associate members in PTG were the subject of much discussion in the 1993 session in

Milwaukee. The 1994 Council will be asked to decide under what circumstances, if any, Associates may have a vote.

- The Long Island-Nassau Chapter has submitted a membership category restructure proposal. They propose to split our current Associate category into two: Associates (non-tuners) and Apprentices (who are on the RPT "track"). Additionally, they will propose setting time requirements on when Apprentices must begin the exam process and when it must be completed.

- Time limits for completing the tuning and technical exams will also be proposed by the Rhode Island Chapter. Their proposed amendment requires each Associate to take either the tuning or the technical exam at least once within each two year period, until all exams are passed.

- The Board will be asking you to consider changing some bylaws regarding Chapter Sustaining members and members who pay reduced dues. For Chapter Sustaining members, Board proposed a Bylaw amendment that increases the token fee the chapter pays from 1/3 of the RPT dues to 1/2. The proposed amendment for the "reduced dues" options aims to simplify the process of offering just one option, namely a reduction to 2/3rds of RPT dues, instead of the current four options.

- And speaking of money, Board will ask for consideration of a dues increase of \$12 in place of the current \$12 dues assessment. For the last three years, Council has authorized this assessment to fund marketing and educational programs. At this Council, the Board intends to present a detailed report on how these funds have been invested. Board believes that our marketing efforts and educational programs have become ongoing activities,

aimed at achieving the goals stated in our Mission Statement. Thus, Council will be asked to incorporate the funding for these programs into the normal budget.

Naturally, there will be more to consider than just these items; Council always has an ambitious agenda! We do plan some changes for you this year. Look for a revised format in the agenda book suggested by Colette Collier, our Secretary-Treasurer, which should make the book easier to use. VP Leon Speir, Colette and I are working toward opening Council with a "shareholders meeting" format, where we offer you our analysis of the current state of PTG and update the agenda book with our latest progress reports and financial updates. Our intent is to provide you with more digestible information to help in your decision-making. And by focusing more on policy and finance, Council will fulfill its true purpose.

July will be here very soon. I hope that each PTG member is giving serious thought to attending our Convention and Institute in Kansas City. And further, I hope every chapter will send a delegate to Council and take part in the great experiment we call democracy. All Council sessions are important; but this one will help us chart a course for our future. Don't miss it!

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luminous sound,
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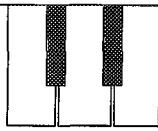
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You Say Symposiums, I Say Symposia

Steve Brady, RPT • Institute Director

Actually, my dictionary says either plural form of symposium is acceptable. What's a symposium? Well, since I have the dictionary open, the definition is: "1. A drinking party, especially following a banquet, with music and conversation. 2. A meeting at which several speakers discuss a topic before an audience." The second variant is the one I'm referring to in this article.

What does this have to do with the 1994 PTG Institute in Kansas City? Another of the new concepts planned for this convention is the idea of symposium-style classes on tuning topics. Just as some people say *potayto* and some say *potahito*, some of us tune strictly by ear and others use electronic tuning aids. Some tune everything in equal temperament, while others tune everything in well temperament. Some set pitch on every tuning at A-440, others let the pitch "float" from season to season. To say that there is a difference of opinion of some of these points is probably understating the case.

At the Kansas City convention, each of these topics will be discussed at a separate symposium. The purpose of the symposium format is to allow different perspectives to be discussed in a civilized fashion, with a distinguished proponent of each different viewpoint offering opening remarks, followed by discussion among the speakers, and, if there is

time, questions from the audience directed to the speakers. The aim of all this discussion is to help all of us better understand why our colleagues hold the opinions they do, and to see what common ground might exist between the opposite "sides."

Here are the three Tuning symposia as planned:

By Eye or By Ear: The Relative Merits of Aural and Electronic Methods. Speakers: Al Sanderson, Virgil Smith, Chris Trivelas. Moderator: LaRoy Edwards.

What's the best way to tune a piano? With the great improvements in electronic tuning aids in the last decade, the question of aural vs. electronic has become more and more difficult to resolve. Three noted tuners express their points of view in this discussion of a timely issue.

Temperamental Tuners: The Relative Merits of Equal and Historical Temperaments in Modern Tuning Practice. Speakers: Owen Jorgensen, Michael Kimbell, Virgil Smith. Moderator: LaRoy Edwards.

Some say equal temperament is the only way to tune a modern piano, others say some form of well temperament or "Victorian" temperament is best for nearly all classical and romantic music, even on the modern piano. This symposium will explore the pros and cons of a controversial subject.

Expanding Horizons



Cultivating Artisans

To Fork or To Float: Perspectives on Pitch Setting and Seasonal Changes. Speakers: Bill Ballard, Jim Coleman, Sr., Chris Trivelas. Moderator: LaRoy Edwards.

Should A-440 be the standard for every tuning, or should the continuous roller-coaster of seasonal changes be considered when setting pitch? Come listen to the philosophies of three leading tuners, and discuss this important topic with them.

All three of these meetings of the minds promise to stimulate our thinking on the subject by which most of us earn our daily bread, namely, tuning. The tuning profession is changing and we all need to be up-to-date on current theory and practice.

In addition to the three symposia on tuning topics, there will be a chapter symposium such as we have had for the past few years. In this meeting, chapter officers will have the opportunity to get help on problems facing their chapters, and to see what other chapters do to run efficiently. The PTG Board and members of our Home Office staff will be on hand at this symposium.

Finally, we are planning a very important symposium which we hope everyone will attend. This session, entitled *Where Do We Go From Here? The State of the Piano Industry*, will be the only class offering during first period on Friday, July 8, the second day of classes. The speakers for this meeting will be Brenda Dillon of the National Piano Foundation, Lloyd Meyer of Mason & Hamlin Companies, Renner USA, and Camilleri Piano Works, and Jack Wyatt, a piano technician and dealer. Topics will include possible futures of the piano industry in general, our future as piano technicians in particular, and what we can do in cooperation with manufacturers and dealers to help perpetuate our mutual interests.

So, whether you say symposia or symposiums, just say you'll be going to Kansas City in July to get your answers and your opinions heard! *Next month: A look at some more new Institute Classes.*



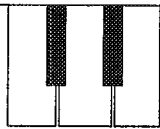
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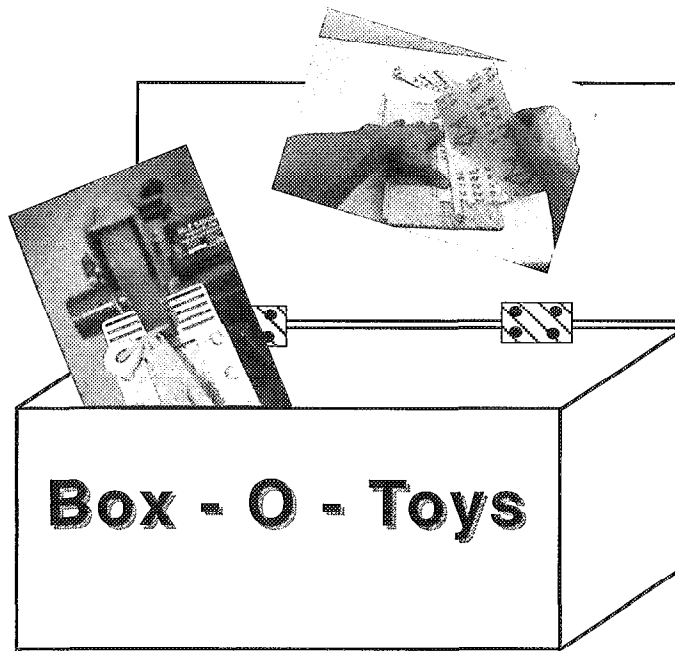
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The following letter seemed appropriate to include at the top of this month's column, both as a letter of inspiration, as well as a lead-in to subsequent items.



As Promised: Some Neat New Toys!

Jim Harvey, RPT
Editor

I'm not a robot (Who wants to be a robot?)

Jim, the following was written as a follow-up to your July 1993 Journal article on "why go to conventions/seminars." Use parts or edit as you see fit to use at all.

How many procedures can you think of that can only be done one way? Driving a car? Some drive with hand controls instead of pedals; and the world can't even agree about which side of the road to drive on. Brushing your teeth isn't uniformly done. And I got into somewhat of an argument when a 6-year-old decided they knew a better way of tying shoe laces than I.

Contradictory, conflicting, or variant procedures in our work are not meant to confuse us or compete for acceptability. They are merely available to "add on" to our brain's computer bank of knowledge.

Some people look at a picture and see colors and tints, others see form, shape, and organization. When we see a mechanical/dexterity situation, different "type" people see different solutions and maybe none are superior... just different.

Such a simple operation as installing a set of bridle straps became smoother when I realized the insertion/connecting process worked easier "for me" when I began at the treble end and worked moving toward the left.

In reviewing several Journal articles on pinblock removal, (circular saw, reciprocating saw, chain saw, drilling and chiseling) I wondered how

long it may be till someone develops (1) some explosive to blast it loose; (2) a wood-only-eating acid dripped into a slight trough that will ring a bell when it reaches a preset depth and thus not cut through wood other than the block. This is in jest, but I was impressed with the diversity and confidence that each writer had in his method.

Most of the things I learn to do (or improve in doing) comes from other technicians or PTG related classes. Now that I've acquired a general working knowledge of how things in a piano work, these new ideas and methods are integrated with what I've been doing (or understood to 'try' to do). Only a robot would learn one way of doing a task and never consider changing. Change should be aimed at a better result or an easier or faster (i.e., more profitable) method of reaching a satisfactory result.

Recently I sat through a hammer-hanging class and in review found that I didn't want to replace any major part of my hammer replacement procedure. Was the class time wasted? Certainly not! #1, it reinforced what I was

already doing. #2, many items were helpful to review. #3, and most important, I had learned one small hint for slightly altering one step in the process that cuts a small amount of time off the total job. Multiplied by several jobs, that's several dollars added to my profit picture. The concept of "diminishing returns" should teach us that the more you have learned on a topic, the harder it's going to be to learn something new on that topic. So enter those discussions; and share what you know and be assured that if you hang around a "topic" long enough, you'll end up better off. Surely, and eventually you'll grasp the topic better which is different in the learning process than learning a new topic.

I don't know whose 'category' this falls within, but...

I would think it would be of general interest to many members to see the percentage of members who attend the national convention/institute broken down by chapter and region.

With all the computerization available it couldn't be that hard to acquire that information and publish it in

some brief form as a follow-up to each year's convention. Thanks for your consideration.

Yours very truly,
Dean Clark

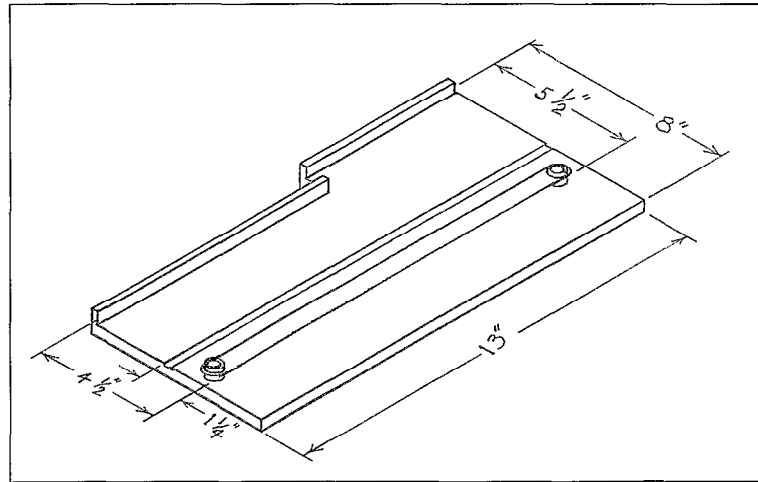
And thank you for sharing your views in this well thought-out, well-written letter, Dean. I trust that those whose "category" it falls within will take note of your percentages request, and act accordingly. I suppose it would take too much room to incorporate my idea: listing the names of those who don't show up at conventions!

Sandpaper cutting tool

The following device, orchestrated by Mr. Bill himself, makes not only a useful shop tool, but a good accompaniment to recent discussions of hammer shaping. Study the photos and drawing as you read the narrative.

Dear Jim,

Sanding, whether in refinishing a cabinet piece or filing a set of hammers, goes much faster and is easier to control if the sandpaper is new. As soon as it begins to dull or load up, speed and quality of work suffer. Buying sandpaper in bulk (50 or 100 sheet "sleeves" from mail order suppliers*) rather than a few sheets at a time from the local hardware store makes it easier and cheaper to keep on hand. However, we sometimes tend to use old sandpaper long after it has worn out rather than to stop and go to the trouble of cutting up new pieces. Here is a simple sandpaper cutting tool that solves that problem. I saw this tool in *Fine Woodworking* magazine several years ago, and at first thought the benefits would not be worth the trouble to make it. However, not being able to resist making another jig to hang on my wall, I built one and now would never be without it. Instead of folding, creasing and tearing, I can now cut up any number of half or quarter sheet pieces for electric sanders and hand sanding blocks as easily as tearing paper towels off a roll.

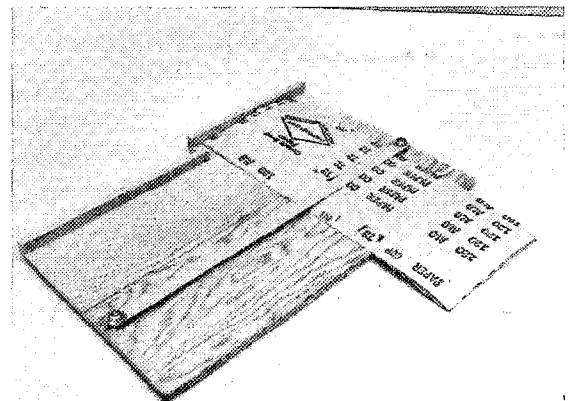
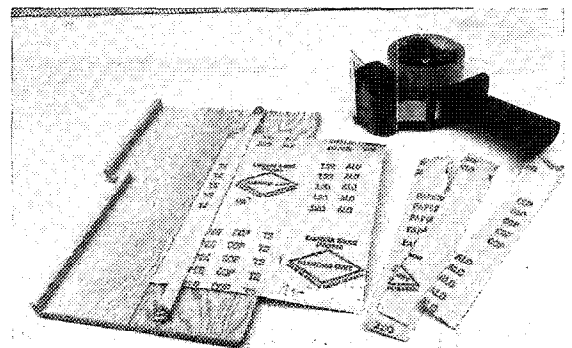
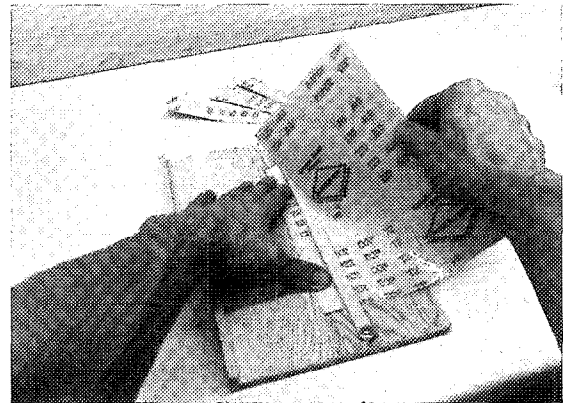


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Sandpaper
Cutter

Better yet, this tool allows fast and accurate cutting of tape-backed sandpaper strips for hammer filing. Here fresh sharp sandpaper is especially important, but cutting it up with a knife or razor immediately ruins your blade. Make this tool and you can easily make new sanding strips for every job; your hammer filing will suddenly become more accurate, enjoyable, and profitable.

The sandpaper cutter is simply a piece of 1/2" plywood with a 12" hacksaw blade mounted about 1/8" above the top surface. Sandpaper slides under the blade until one edge aligns with a groove in the surface or a wooden edge stop, depending upon the size piece you are cutting. The "toothed" edge of the blade does the cutting, as you hold the paper down to the plywood with one hand while lifting the free side of the paper up against the blade.

Suggested dimensions are shown in the drawing. The hacksaw blade is mounted on #8 x 32 flathead machine screws which are countersunk flush to the bottom of the plywood. Five flat washers space the hacksaw blade 1/8" above the plywood, then a flat washer and nut go on top.



Note: the blade should be under some tension when the nuts are tight. To accomplish this, drill the screw holes in the plywood 1/32" farther apart than the holes on the hacksaw blade. This will require a slight force-fit to get the blade onto the screws, leaving the blade stretched tight.

The wooden stop edge located 4 1/2" from the blade's cutting edge allows cutting 9" x 11" sheets of sandpaper into half sheets; the 5 1/2" stop can then be used to cut the half sheets into quarter sheets. A shallow groove routed in the plywood surface serves as a stop for 1 1/4" hammer filing strips; rout other grooves as needed for other sizes. For backing sandpaper for hammer filing strips, I find 2" plastic packing tape in a tape gun works best.

*Bulk sandpaper can be ordered from:
Webb Phillips & Associates:
(800)622-7426
Econ-Abrasives: (800)367-4101

Industrial Abrasives Co.: (800)428-2222
Bill Spurlock

Hammer tail arcing jig

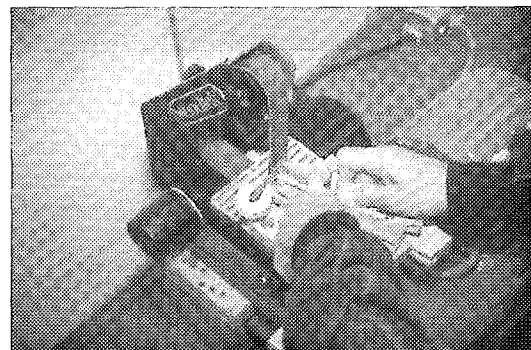
The next two handy items come from Richard Davenport, who is famous for not leaving well-enough alone. Again, refer to the cover and accompanying photos for clarity.

Dear Jim,

Enclosed are the slides taken of my two newest fixtures. the 1" x 30" belt sander is dedicated to the task of arcing hammer tails. Two 1/3 hp motors, each angled at approximately 3 degrees, allow me, with the help of an adjustable stop, to achieve the desired taper.

The arcing jig is derived from one Bill Spurlock created and I modified. I attached two notched runners to the table using 1/4" x 20 bolts. The jig slides in

these runners, which are adjustable. Underneath, I have a stop screw to limit travel. It too is adjustable and uses the table as the stop. I made two locating points for the hammer tail. The simple point is used with unhung hammers. The more complex one is used for hammers



attached to the shanks. I'm sure you will be able to arrive at a simpler solution.

Simpler no. More fun though, is

Tune in to a new career opportunity...

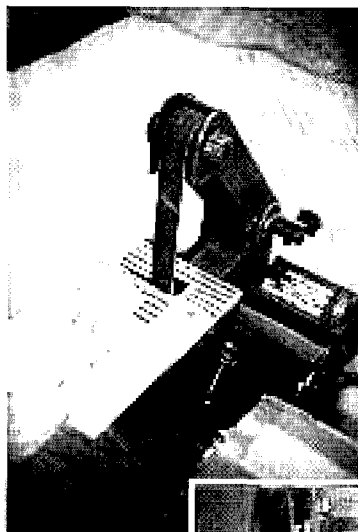
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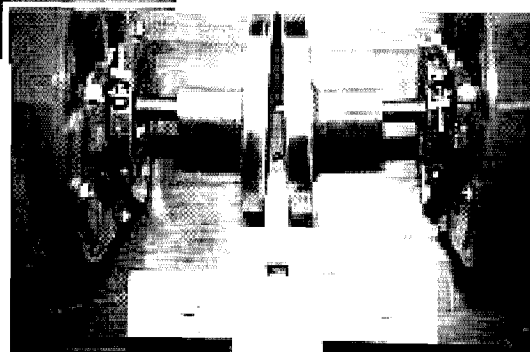
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"chain saw hammer tail sculpturing." Unfortunately, since this requires more years of experience to master than even a free-hand Moto-Tool, I don't recommend it for the faint of heart.



*Hammer Tail
Arcing Jig
&
Hammer Tail
Shaping Jig*



Hammer tail shaping jig

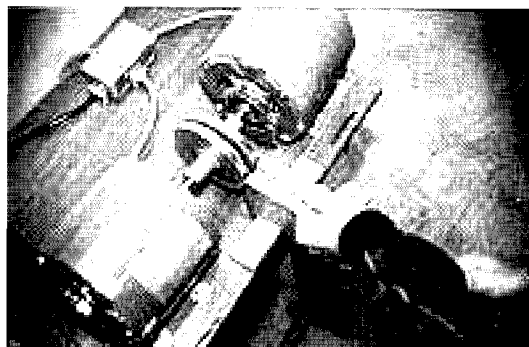
To continue with Richard's letter, another useful, albeit potentially costly shop tool.

...The tapering jig is a copy of one I photographed recently in Keith

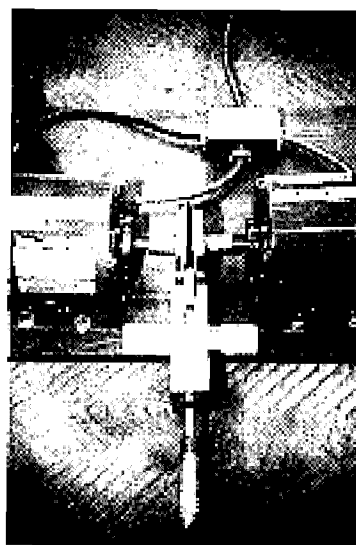
Hardesty's shop. Motors slide back and forth and the aluminum disks can be moved laterally on the shafts. The 5/16" square rod is tapered and turned up at the end 90 degrees. A collar fixed to this rod acts as a stop. The height of the rod is determined by the center line of the disk. In actual operation, the hammer is pressed into the 90 degree stop and slowly pushed into the spinning disks. The handle is used both to control the feed and extract the tapered hammer. Centering the hammer doesn't seem to be a problem. The disks seem to remove the same amount of material from each side.

Since creating these jigs, I have managed to save about thirty minutes on these routine tasks.

Regards,
[Yo'] Richard



Note to the uninitiated: You'll note that Richard opted for new, deluxe Dayton's for this project, instead of a couple of used washing machine motors from the local thrift emporium. As is true with soundboard installation and other specialized equipment, one must do an awful lot of hammer work to justify this approach. Richard does enough hammer work to use the old hammer felt to make sweat socks (still another dedicated machine). For the rest of us, some quick calculations indicate that at thirty minutes saved per job, the machine should amortize itself in approximately 83 years.



Next month's issue will include coverage of this year's NAMM show at Anaheim, and hopefully a return to normal routine for our "regular" writers — many of whom were caught up in NAMM preparations for this month's issue. Until then, stay warm, dry and healthy!

In brief

The previous lesson covered hammer filing using sandpaper paddles. This time we'll discuss filing with tape-backed sandpaper strips. Participants will learn to develop speed and uniformity with the gang-filing method.

Getting started

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

Hands-on session setup

To teach this job in a hands-on format, obtain the following parts and materials:

- One grand action for every two participants. (In simplest form, the lesson can consist of each person filing six straight-bored hammers and six angled hammers. If time allows, participants can take turns on the same action in order to complete the job during the lesson.)

- Extra wood pieces,

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LESSON PLAN

Technical Lesson #7

Hammer Filing, Part II

By Bill Spurlock, RPT
Sacramento Valley Chapter

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

approx. 1" x 1" x 10" to rest on shanks

- Extra sandpaper
- strips, backed with tape
- Extra "voicing blocks" (figure 1) for propping up hammers

Estimated lesson time

One to two hours

Tools & materials participants must bring

Participants must obtain and bring all items shown in photo 1. Shown are a "voicing block" (used to prop up a section of hammers during filing and needling) strips of sandpaper backed with tape, and a paper dust mask. The voicing block can be home-made using the dimensions in figure 1, or purchased from Yamaha Corporation or Schaff Piano Supply.

Sandpaper strips for hammer filing need to be backed with tape to add strength and stiffness. Clear or tan plastic packing tape (plain or reinforced) works best.

Sandpaper strips of 7/8" and 1 1/2" wide work well. Open-coat garnet or aluminum oxide sandpaper cuts most efficiently. An assortment of grits is necessary to match the size of hammer and degree of wear:

- For fast initial shaping of large, very worn hammers, 60 to 80 grit works well

- For moderate cutting speed on large to medium hammers, and for low shoulder filing of treble hammers, try 120 grit.

- For slow controllable filing, especially for the crowns of smaller hammers, 220 grit works well and leaves a smooth clean surface.

Assigned prior reading for participants

PTG Technical Exam Source Book (PTG Home Office, 816-753-7747), pages VI.1 through VI.5; 12-93 *Journal* article, Good Vibrations - Hammer Work; 12-93 *Journal* article, Everyday Voicing - File It Away; 1-94 *Journal* article, Everyday Voicing - Against the Grain; and 1-94 *Journal* article, Good Vibrations - Hammer Work. Also, practice the techniques in this lesson before the meeting session to gain some initial skill; you will then gain more from the hands-on session.

General instructions

Filing with sandpaper strips (rather than rigid paddles) allows greater speed and uniformity, especially on grand hammers. A section of hammers is propped up to strike level, where they can be filed without lifting each hammer up separately. The area of the hammer to be filed is controlled by finger pressure on the back of the sandpaper. The angle of cut (bass and tenor angled hammers) is controlled by holding tension on one edge of the sandpaper strip only and by angling the strip.

Shoulder areas of angled hammers are filed one hammer at a time to preserve the angle, while straight-bored hammers are gang-filed three or more at a time. The top crowns of all hammers, straight or angled, can be gang filed.

Instead of filing one hammer completely and then going to the next, as you might when using a paddle, strip filing is done

sequentially on a group of hammers. For example, you might file three strokes on the lower front shoulder of each hammer in the group, then three strokes on each upper front shoulder, and so on until all hammers in that section are done. Using this method, you maintain the same angle and direction of stroke on the sandpaper as you advance from one hammer to the next.

Important: Always use new, sharp sandpaper. The work will not only go faster, but you will have better control because less pressure will be required. As you develop your technique, strive for smooth, even strokes. You will get better results using light-to-moderate pressure with quick strokes, rather than heavy pressure with slow, jerky strokes. When filing to remove string grooves, be conservative. Remove only as much felt as necessary to restore proper shape, *without filing below the depth of string cuts in the crown*. It is better to end up with faint string cuts remaining on the crowns and remove these with a light second filing than to rob the hammers of useful life by removing more felt than necessary from the crowns.

Like any skill, hammer filing requires practice to do well. Try various techniques to develop methods that work best for you. I suggest the following procedures:

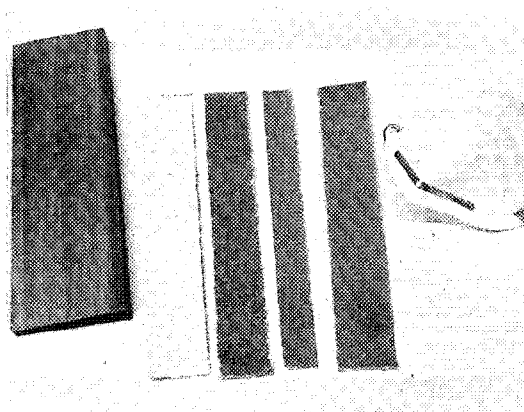


Photo 1:

Participants must obtain the following items for this lesson: A "voicing block"; strips of sandpaper backed with tape, and a paper dust mask.

Figure 1: Hammer filing/voicing block

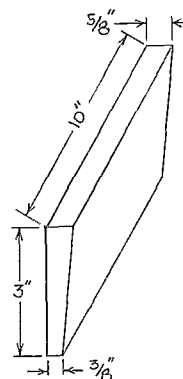


Photo 2: Place the voicing block between the backchecks and wippen flanges to support the hammer tails of approximately 18 bass hammers.

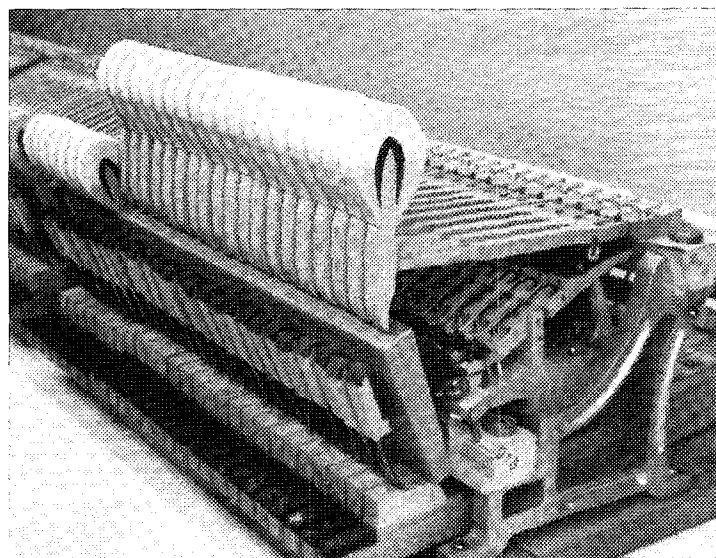
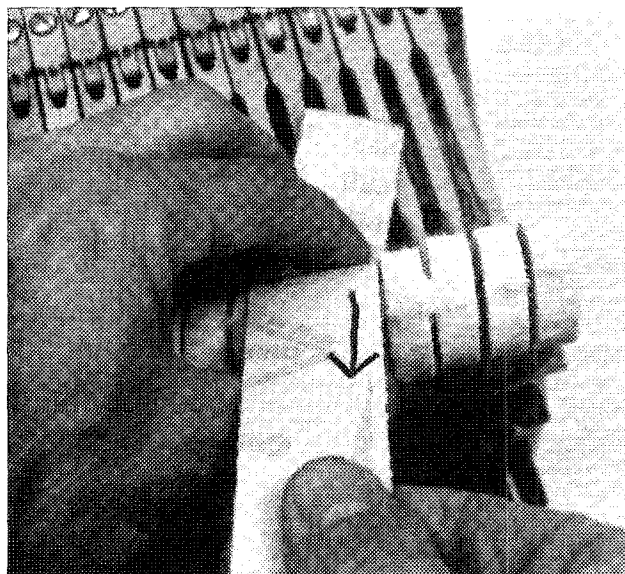


Photo 3: Begin filing the front shoulders. Note that the left index finger is placing pressure low on the shoulder; this causes the paper to cut in that area. Note also that the paper is held by its right edge (since it is the right 3/8" of the strip that is sanding this hammer), and that it is angled to match the hammers. The right edge of the sandpaper is guided by the edge of the adjacent hammer. In this step, file from as low on the shoulders as possible up to about the two o'clock position, using an equal number of strokes on each hammer in the group.

Important: To keep the surface of each hammer square to its sides, watch the leading edge of your cut. It should be straight across the hammer. Check often and adjust the angle of your paper as you go.



Areas filed in various photos

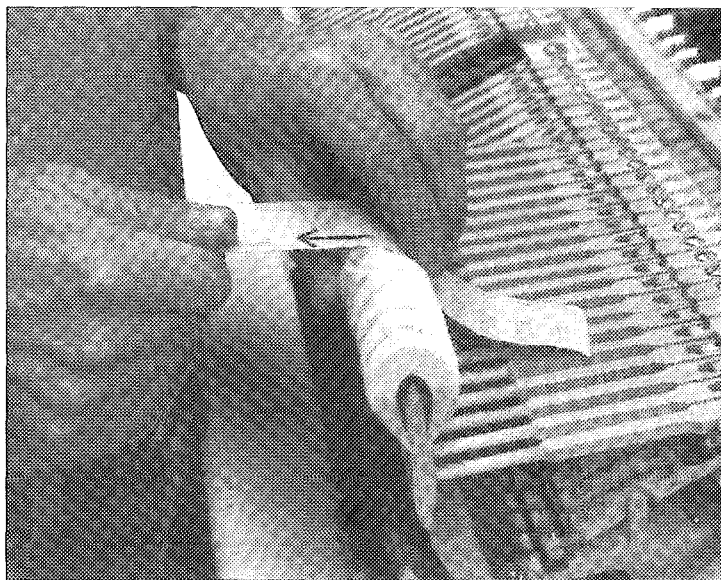
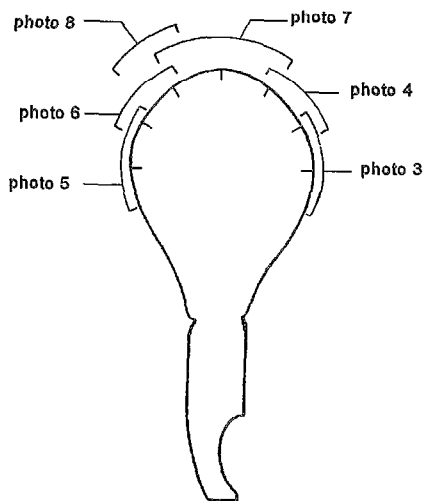
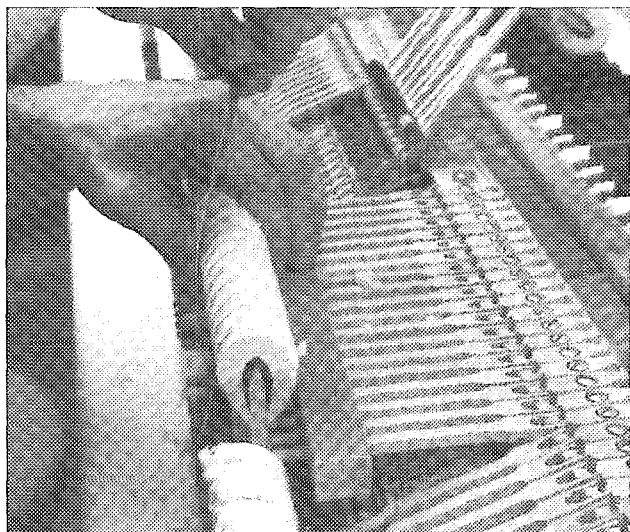
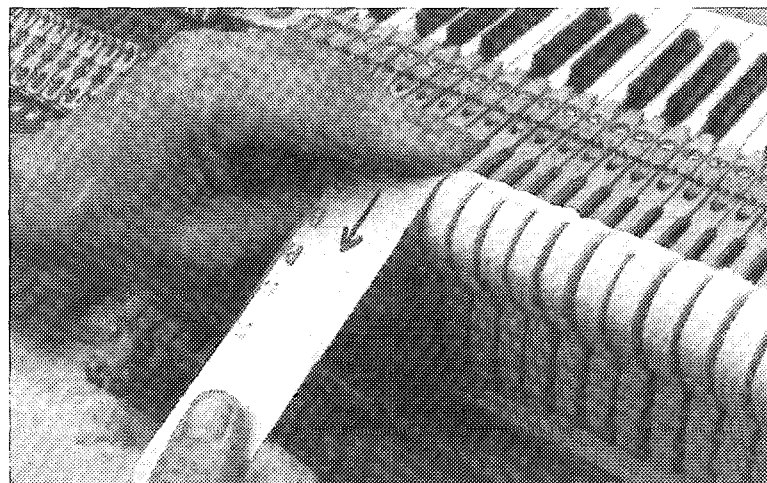


Photo 4: Continue the filing up to about the one o'clock position (but not over the crown) by moving the left index finger higher on the shoulders and pulling the sandpaper more horizontal rather than upward. Again use an equal number of strokes on each hammer of the group.

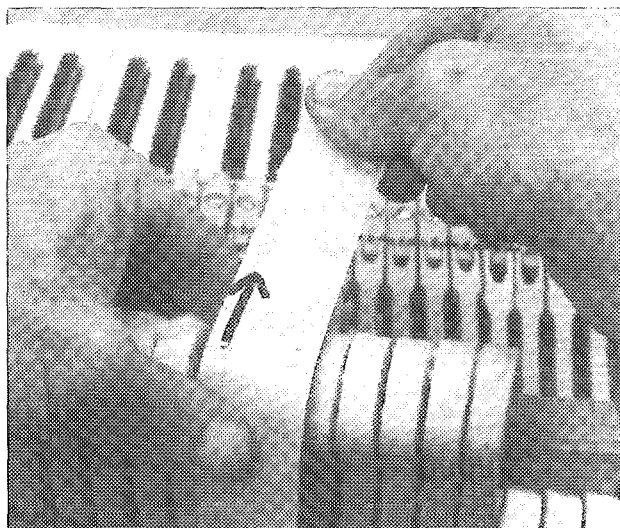


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7

Photos 5 & 6: File the rear shoulders of the group in the same manner, first with pressure low on the shoulder of each hammer, then with a second pass slightly higher. Note the wood block that prevents hammers from lifting up as they are filed. Use the same number of strokes as before, and lift a hammer frequently to check that you are filing both sides evenly.



6

Photo 7: File the crowns. Using a sandpaper strip 1 1/2" wide, file three hammers at a time. For more controllable cutting and a smoother surface, you may want to use a finer grit here than you used on the shoulders. Put light finger pressure directly over the striking point to restrict the cutting to the one o'clock to eleven o'clock area. For an even hammer shape and size across the section, file one group of three hammers with, for example, two strokes, then advance one hammer and repeat. By advancing only one hammer at a time, each hammer gets filed two strokes lightly three times, first as the right hammer of the trio, then as the center, and then the left. This way uniformity is maintained.

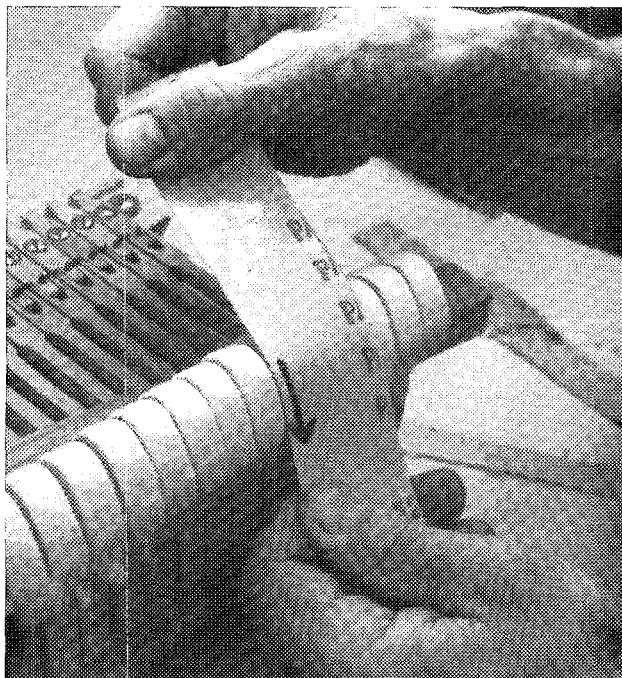
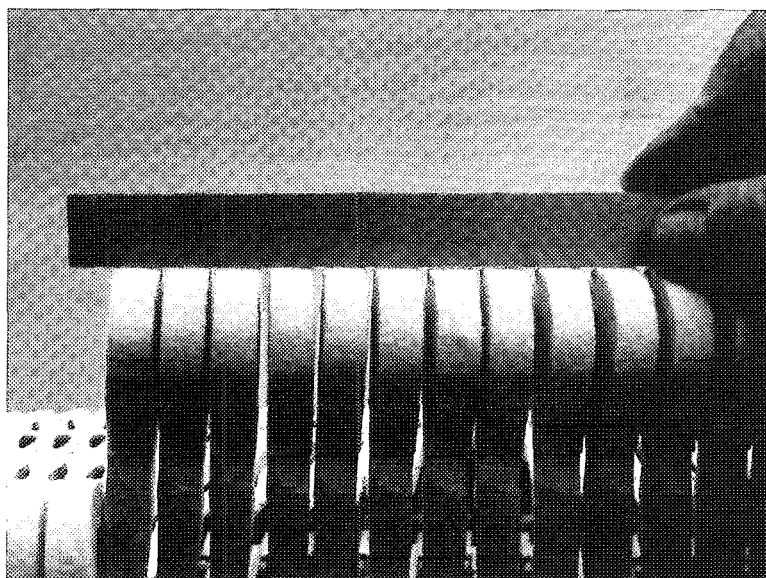
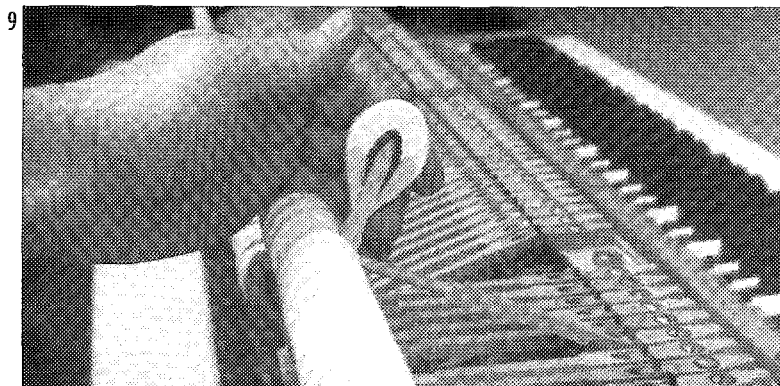
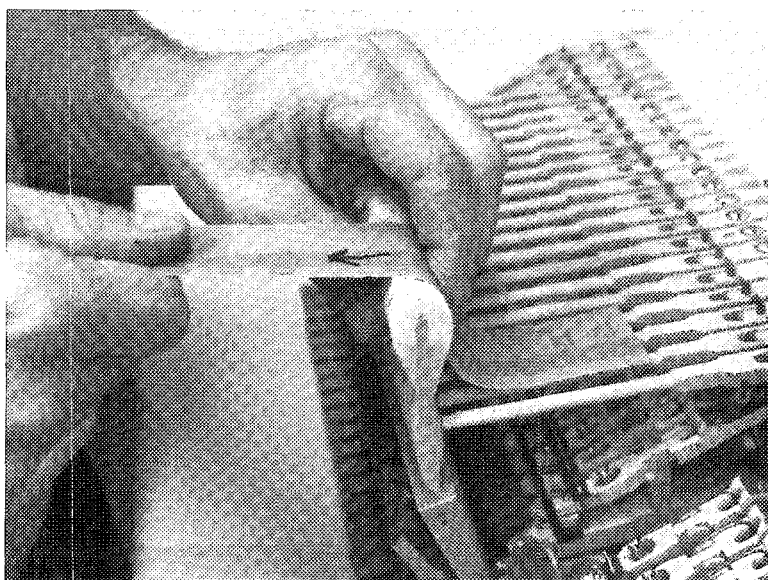


Photo 8: The last step is to blend in the upper rear shoulder area to the crown, by filing just the 11:30 to ten o'clock area. Hold the sandpaper strip as shown, under good tension, and use short, quick strokes. Be careful to maintain the correct angle. In the photo, compare the appearance of the hammers to the left (not yet done) and those to the right. A finer sandpaper will give the best surface finish here.



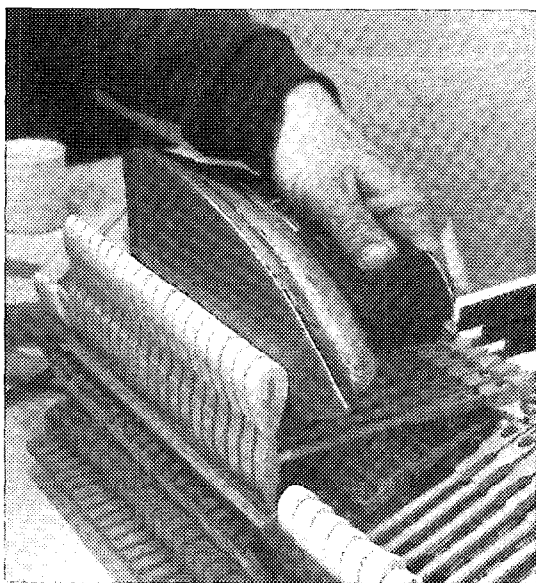
Photos 9 & 10: Again check that the hammers are symmetrical (unless they were made lopsided to begin with). **Important:** Check that the strike points are square by supporting the hammer tails (be sure that the hammer support block is parallel to the bench top) and checking the crowns with a straightedge as shown. Correct any angled crowns.



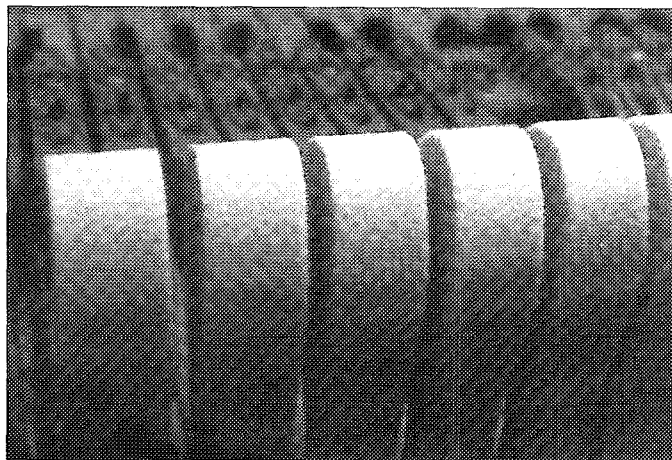
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Photo 11: The sequence is the same for straight-bored sections, except that all areas (not just the crowns) are gang filed. **Caution:** The upper shoulders and crowns of small treble hammers file more quickly than larger hammers. To compensate, reduce the number of strokes per step and change to finer grits as you move toward the treble. Be especially careful with the very small top octave hammers, using light pressure and a fine paper such as 220 grit. This will also leave a smoother crown and help brighten treble tone.

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Photos 12 & 13: The hammers should be symmetrical, smooth, and free of string grooves when you are done. Not all hammers will file smoothly; experiment with sanding direction and grit to get the best results. If necessary, remaining roughness can be smoothed with a warm iron.



Follow-up

As with any new skill, participants should practice this job on their own until they can perform it easily with consistent results. Only by practicing repeatedly on different types of hammers can the technician develop the skill and technique to do the job efficiently for the client.

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In Brief

In this lesson, participants will practice tuning and checking 2:1 octaves aurally; these are octaves in which the second partial of the lower note is the same pitch as the first partial, or fundamental, of the upper note. Following the instructor's demonstration, each participant will tune several midrange or treble octaves and use the M10-M17 test to check the tuning of each one, as well as the consistency of parallel 2:1 octaves. Time permitting, after all participants have had an opportunity to practice the lesson, volunteers will deliberately tune octaves in the bass, midrange and treble as pure 2:1 octaves, and the group will discuss pros and cons of tuning pure 2:1 octaves in these areas.

Chapter meeting set-up

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

Tools & materials participants must bring

Tuning hammer and mutes, Coleman Beat Locator.

Home study assignment for participants

In the big red reference book *Tuning*, by Owen Jorgensen (MSU Press, 1991)

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LESSON PLAN

Tuning Lesson #7

Tuning 2:1 Octaves

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

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

there is an abundance of useful information in the appendices, sections 224-233; see esp. section 229, "The General Locations Where Various Sizes of Octaves are Tuned"; section 230, "Tests for Octaves" and section 231 "A Catalogue of Test Intervals Through Eight Harmonics." Pay special attention to the text on p. 754 of section 231, and study the six tests shown for a just 2:1 octave immediately following.

Using your Coleman Beat Locator, find and list the names of the notes corresponding to the coincident partials in the octave C2-C3. Using the aural focusing technique described in tuning lesson #5, (*Journal* 1/94), mute to single strings and tune C3 first as a beatless 2:1 octave, then 4:2, then 6:3, etc. for as many octave coincident partial pairs as you can hear.

Which type of octave sounds best to you overall?

Practice tuning 2:1 octaves as follows.

Exercise: Tune A4 A5 as a pure 2:1 octave

Although tuners seldom deliberately use a pure (or just) 2:1 octave in everyday work, except perhaps in the high treble, it is often useful to know one or two tests that let you hear an octave at the 2:1 level in order to judge consistency of tuning from one octave to the next. The most commonly used 2:1 octave test is the M10-M17 test. The octave is just at the 2:1 level if the M10 up to the lower note beats the same speed as the M17 up to the upper note. The comparison is between a 5:2 M10 and a 5:1 M17. Very often, it will be easier to hear a 2:1 octave after first clearing

the unison on the note you're tuning from. Be aware that the 4:2 partials (near A6 for the A4-A5 octave) may try to get your attention, but you must ignore them for this exercise. Use this information to tune A4-A5 as a pure 2:1 octave as follows:

1. Tune the A4 unison until it's clean and solid, and mute A5 and test note F3 to single strings. Make sure F3-A4 is beating on the wide side of pure, about 6-8 bps.

2. Tune A5 to A4 as a simple octave, playing both notes together and aurally focusing on A5.

3. Compare the beat rate of the M10, F3-A4 to that of the M17, F3-A5. If they are identical, and remain so after a test blow on A5, proceed to step 6. If not, go to step 4 or 5.

4. If the M17 is beating faster than the M10, correct by lowering A5 a tiny amount, then go to step 3.

5. If the M17 is beating slower than the M10, correct by raising A5 a tiny amount, then go to step 3.

6. Tune the A5 unison until it's clean and solid. Now try the M10-M17 test once again. If the beat rates are identical, you are finished. If not, recheck your unisons, and test again. If you still have a problem, start over.

General instructions

The instructor should first talk a little bit about 2:1 octaves, what they are and how we test for them. Point out that although today's activity (tuning pure 2:1 octaves) would not often be appropriate in an actual tuning, it's good practice that teaches control, teaches the

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M10-M17 test, and has a result that can be checked for accuracy. If you can tune a pure 2:1 octave accurately, you should have the skill needed to tune it a bit wide or narrow, as the piano requires. Make sure everyone understands the M10-M17 test; have a volunteer use a Coleman Beat Locator to analyze the test intervals.

Each participant should tune three notes in octave five as 2:1 octaves, and use the M10-M17 test to prove the results. Follow the example above; the instructor should prompt as needed to keep things moving, though keeping interruptions to a minimum. In each case, the single strings in octave five should be tuned to unisons in octave four, the M10-M17 test applied in parallel fashion to the three octaves, adjust-

ments made, unisons pulled in, and the octaves rechecked with the M10-M17 test for accuracy and consistency.

If time permits after everyone has completed this practice exercise, get a volunteer to tune as 2:1 octaves A1-A2, D#4-D#5, and A6-A7. To save time, just tune single strings. Adjust the test note in each case so the beat rate is audible. If there is difficulty using the M10-M17 test (not possible for the A1-A2 octave), try a P5-P12 test (see below), or use a SAT to tune the octaves as pure 2:1. The purpose of doing this is to be able to hear what a 2:1 octave sounds like in the bass, midrange, and treble, and to open up a discussion of the pros and cons of using 2:1 octaves in these areas.

The P5-P12 test may also be used to check 2:1 octave tuning, as in the following example. Tune A1 to A2, play the 3:2 P5, D1-A1 versus the 3:1 P12, D1-A2. Adjust D1 as needed to produce 4-6 bps with A1 at the A2 level. The 6:4 P5 and the 6:2 P12 will interfere with this test, producing beats at the A3 level (and a 4:2 octave if they are equal beating!), so use caution in making judgments.

Note: Do you find these lesson plans valuable? Do you have specific suggestions for changes or clarification? Please direct any comments or suggestions to PTG Home Office, who will forward them to the author.

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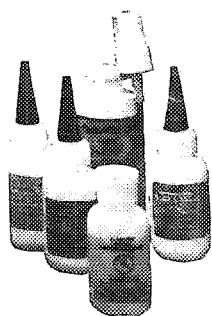
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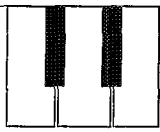
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Interplay of Intervals

Michael Kimbell, RPT
Contributing Editor
San Francisco Chapter

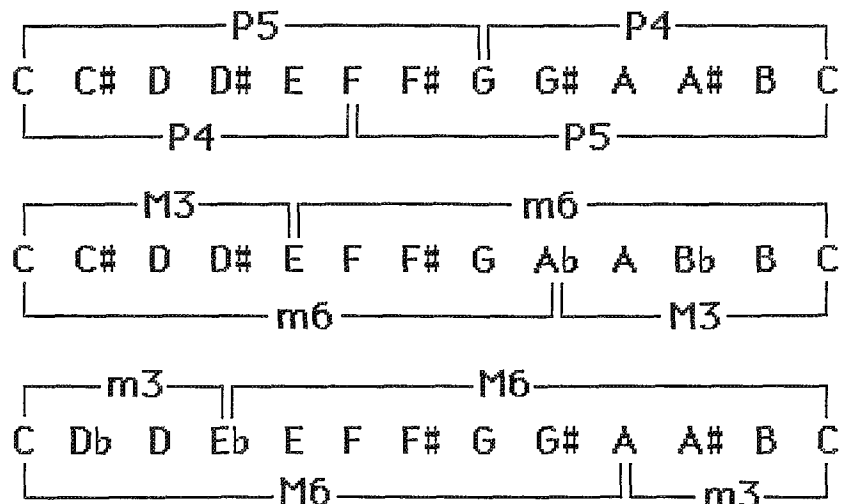
In previous articles we have explored the types and diversity of intervals, and we have seen how inharmonicity affects the tuning of octaves across the piano keyboard. In this article and the next we shall see what happens when we begin to put intervals together in various combinations to form the "temperament," in which the tuner establishes twelve different pitches in the midrange of the piano, and from which he or she tunes the rest of the instrument. A good understanding of how intervals behave and interact with each other in small groups of two or three can be of enormous help, especially when it comes to making corrections and refinements to an equal temperament. It can also help us to understand and tune any of the meantone, well or other non-equal temperaments.

We shall ignore seconds, sevenths and tritones and concentrate on the "consonant" intervals used in setting up a temperament: octaves, fifths, fourths, thirds and sixths. First we shall explore the interaction of the octave with each of the other intervals; then we shall explore the interactions of both the fifth and the fourth with thirds and sixths. In each case we shall see what happens in terms of both cents and beat patterns, with an eye to the precise tuning of octaves, fifths and fourths by comparing the beat rates of related thirds and sixths.

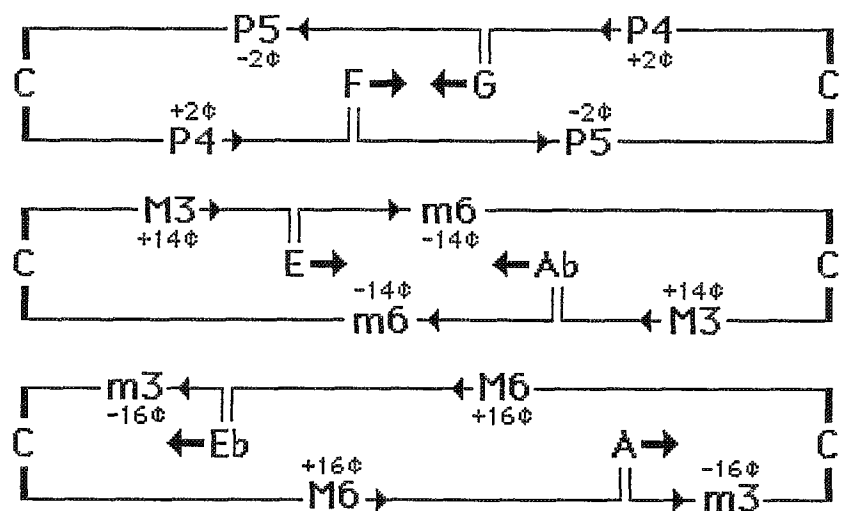
Let us start with the octave and the fifth, both going upward from a common lower note, as shown in the top part of Example 1. We shall assume for the moment that both the fifth and the octave are entirely beatless. As you can see from the example, which shows the octave C-C and the fifth C-G, the "leftover" interval or difference is the fourth G-C; this fourth will also be beatless. We say that the fourth is the *inversion* of the fifth: the two intervals use the same pair of notes (C and G), the only difference being that the G is the upper note of the fifth whereas the C is the upper note of the fourth. The two intervals stacked one above the other make up an octave.

If you recall the vibration ratios for all three beatless intervals (2:1 for the octave, 3:2 for the fifth and 4:3 for the fourth) you can follow the arithmetic of stacked intervals: 2/1 (the octave) equals 3/2 (the fifth) times 4/3 (the fourth). Although our intuition *adds* the fifth and fourth to equal an octave, when working with ratios we must *multiply*, since ratios themselves are expressions of multiplication and division.

If we now let the fifth and octave go downward from a common upper note, as shown by the downward brackets in the top part of Example 1, we see that the leftover interval is again a fourth: the fifth F-C is the inversion of the fourth C-F and



Example 1 - Inversion of intervals



Example 2 - Inversions of tempered intervals

vice-versa, just as the fourth G-C is the inversion of the fifth C-G and vice-versa as shown by the upward brackets. At this point all of these intervals are beatless.

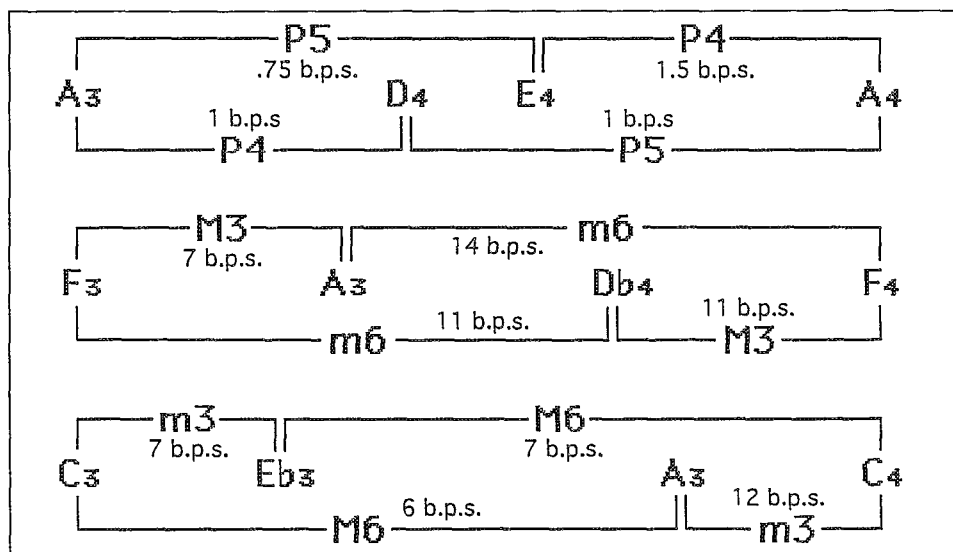
When we temper a fifth so that it is no longer beatless, the corresponding fourth (its inversion) is tempered by exactly the same amount in the opposite direction (assuming a

purpose or by accident, you need to be aware of what is happening in your temperament.

Some sample beat rates for fourths and fifths in equal temperament are shown in the top part of Example 3. Notice that when the fourth is stacked above the fifth, the fourth beats twice as fast as the fifth; when the fifth is stacked above the

half cents, whereas the fifths would be narrowed by only one and a half cents. This means that the fourth A3-D4 would beat slightly faster than once per second but the fifth D4-A4 would beat more slowly than once per second.

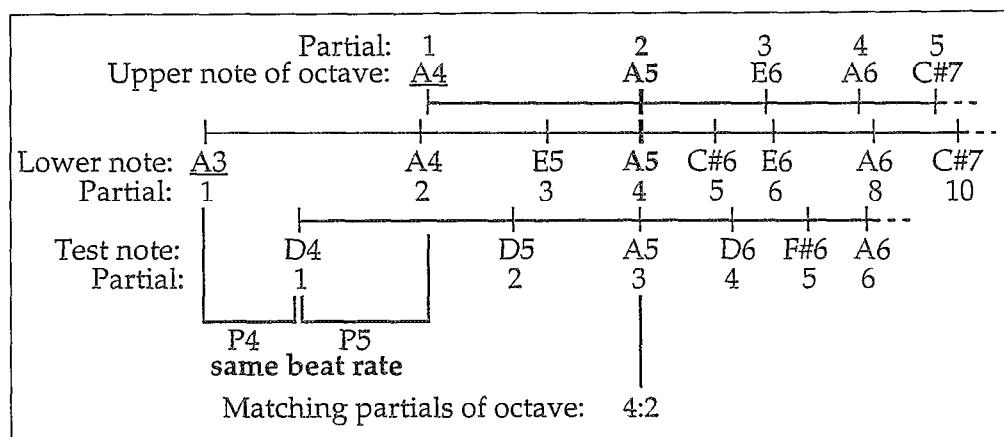
We need, however, to examine the situation more closely. At what level (if any) are the partials of the octave A3-A4 matched? Last month we saw that 4:2 partial matching might be a good choice for A3-A4, particularly on a smaller piano. If we consider the partials of D4 along with the partials of A3 and A4, as shown in Example 4, we see that a triple match occurs at A5: this means that when the fourth A3-D4 and the fifth D4-A4 have the same beat rate, the octave A3-A4 is beatless at the 4:2 level. If we desire a "stretched" 4:2 octave (for a larger piano), we can let the fourth beat a hair faster than the fifth. This test is a good alternative to the M3-M10 test described last month — in one respect it is perhaps even better, since it relies on the third partial of the test note instead of the fifth partial,



Example 3 - Beat rates in equal temperament

perfectly beatless octave). Consider the top part of Example 2: if the G is tuned downward by 2 cents, as indicated by the large arrow, then the fifth C-G is narrowed by 2 cents; simultaneously, its inversion the fourth G-C is widened by the same 2 cents. Likewise, if the F is tuned upward by 2 cents, then the fourth C-F (shown by the downward brackets) is widened by 2 cents and its inversion the fifth F-C is narrowed by 2 cents.

We are not necessarily restricted to the value of 2 cents dictated by equal temperament: in several well temperaments, the fifth C-G is narrowed by 4 cents, which means that its inversion the fourth G-C is widened by 4 cents. We can even go in the "wrong" direction: in a typical 17th-century French modified meantone temperament, the fifth Eb-Bb is widened by 4 cents, hence its inversion the fourth Bb-Eb is narrowed by the same 4 cents! Whether you have arrived at similar fourths and fifths on



Example 4 - P4-P5 test for 4:2 octave

fourth, the beat rates are equal. Inharmonicity leads to a slight modification of these beat rate relationships. If the octave is "stretched" so that A3 in the example is tuned downward one cent, then D4 and E4 would each be tuned downward approximately a half cent from their theoretical "unstretched" positions; the fourths would then be widened by two and a

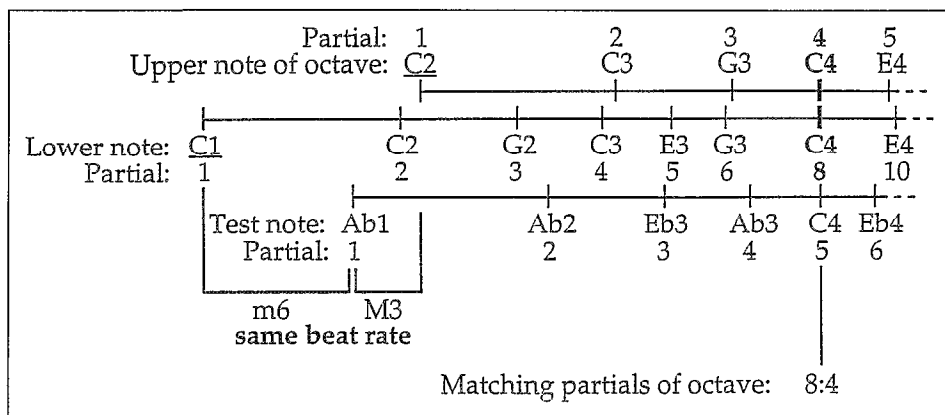
although the actual pitch of beating is the same (in this case A5, whether we use D4 or F3 as the test note).

Let us now turn to the interaction of major thirds with octaves, shown in the middle portions of Examples 1, 2 and 3. In this case we see that the "leftover" interval is the minor sixth, whether we go upward from the lower C or downward from

the upper C: we can therefore say that the minor sixth is the inversion of the major third, and vice-versa. If the octave and major third are both beatless, then the minor sixth is also beatless: in this case $2/1$ (the octave) equals $5/4$ (the M3) times $8/5$ (the m6). If the major third is widened by about 14 cents, as in equal temperament, then the minor sixth is correspondingly narrowed by 14 cents. Although the minor sixth beats too fast in equal temperament to be of much use, in Example 3 we can see beat relationships similar to those between fourths and fifths: if the minor sixth is stacked above the major third, the m6 beats twice as fast as the M3; if the M3 is stacked above the m6, the beat rates are equal (or almost equal, depending on the amount of "stretch" in the octave). These beat relationships may be of use in tuning some unequal temperaments, where for some minor thirds and major sixths the beat rates are much slower. They are also of use in tuning the bass section of large pianos: the m6-M3 test applies to 8:4 octaves, as shown in Example 5.

Inharmonicity leads to a very slight further widening of all major thirds on the piano. If an octave is widened by one cent, then the thirds contained within it are each widened by about a third of a cent, from their theoretical value of about 13.7 cents wider than beatless to roughly 14 cents wider than beatless in equal temperament. In the midrange this difference has negligible musical effect, but in the treble section (around octave 5) an overly-generous stretching of the octaves adds to the already shrill character of high thirds and compound thirds in equal temperament, to the detriment of earlier piano literature, particularly works by Mozart.

The interaction of minor thirds with octaves is illustrated in the bottom portions of Examples 1, 2 and 3. Here we can see that the major sixth is the inversion of the minor third and vice-versa. If the octave and the minor third are both beatless, then the major sixth is also beatless: in this case $2/1$



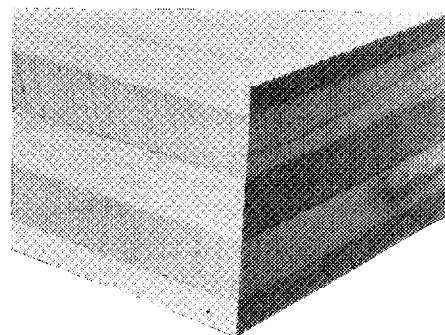
Example 5 - m6-M3 test for 8:4 octave

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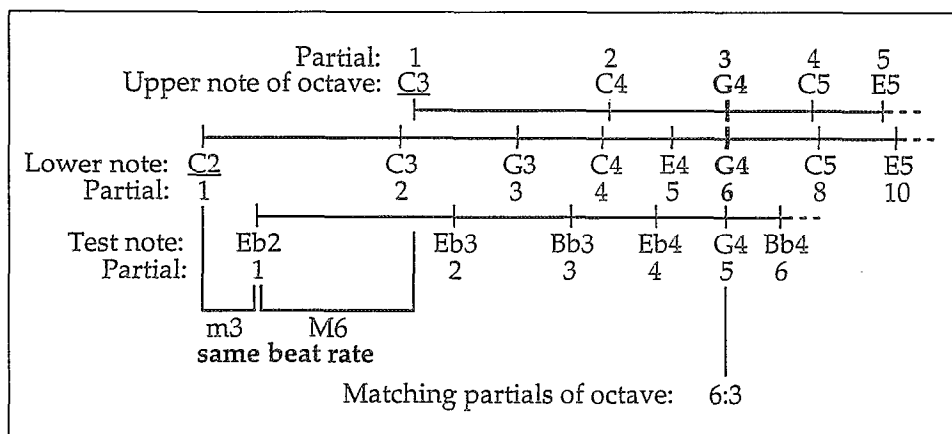


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Example 6 - m3-M6 test for 6:3 octave

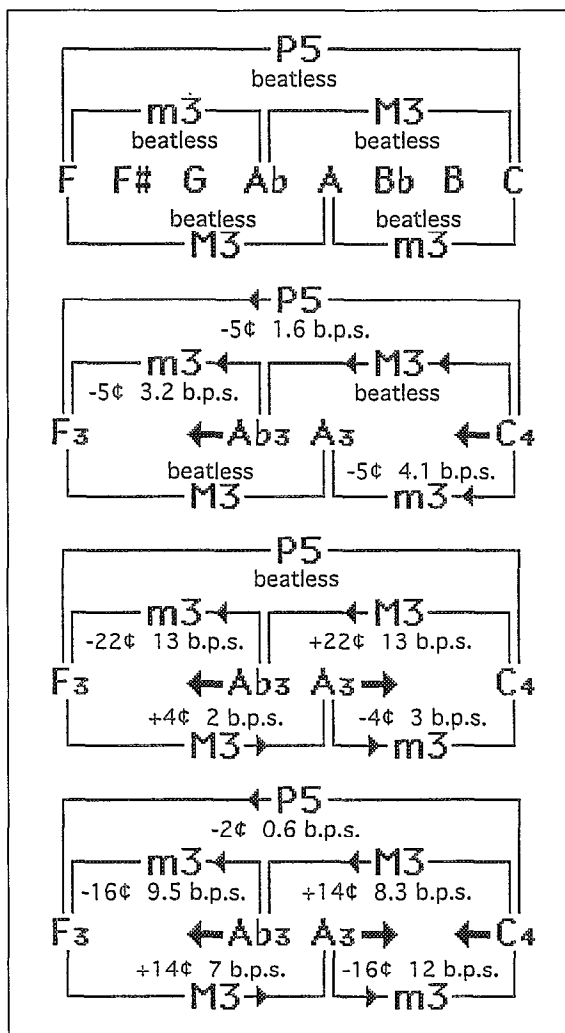
(the octave) equals 6/5 (the m3) times 5/3 (the M6). If the minor third is narrowed by about 16 cents, as in equal temperament, the major sixth is widened by the same amount. When the minor third is stacked above the major sixth, the m3 beats twice as fast as the M6; when the M6 is stacked above the m3, the beat rates are equal if the octave partials are matched at the 6:3 level, as we saw last month and can see again in Example 6.

At this point we can classify the consonant intervals into four groups according to inversions: octaves, P5/P4, M3/m6, and M6/m3, as shown in Example 7. In the setting up of any temperament, an interval can always substitute or "stand in" for its inversion, always assuming that all octaves are set exactly as we want them. For instance, tuning a fourth downward is equivalent to tuning a fifth upward. When we check a progression of major sixths, we are in effect checking a progression of equivalent minor thirds. An interval tuned too wide results in its inversion being tuned too narrow: an overly narrow E4-B4 fifth can alert us to an overly wide B3-E4 fourth in the temperament, and so forth. As we extend the network of intervals into the seeming maze of the temperament, it is helpful to realize that there are only four kinds of puzzle pieces.

Let us now examine the interaction of the perfect fifth with major and minor thirds, as shown in Example 8. The situation here is similar to the interaction of the octave

- 1 — Octave
- 2 — Perfect fifth/perfect fourth
- 3 — Major third/minor sixth
- 4 — Major sixth/minor third

Example 7 - Four classes of intervals



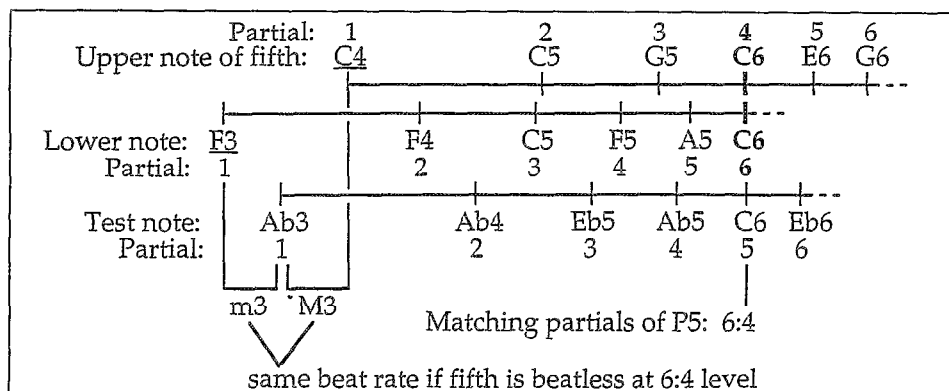
Example 8 - Interaction of P5 with M3 and m3

with other intervals, except that whereas the octave is faintly tempered to accommodate inharmonicity, the fifth is more definitely tempered by about 2 cents in equal temperament. Let us start, however, by assuming that the fifth is perfectly beatless, as in the first part of the example. If the major third is likewise perfectly beatless, then the minor third is also beatless: in this case 3/2 (the fifth) equals 5/4 (the M3) times 6/5 (the m3).

The second part of Example 8 shows what happens when we narrow the fifth by 5 cents but leave the major third beatless, as in meantone temperament: the minor third is also narrowed by 5 cents, and the beat rates are approximately as shown. The third part of Example 8 shows what happens when we leave the fifth beatless but widen the major thirds, as for the fifth F-C in Werckmeister's well temperament: in this case if the major third F-A is widened by about 4 cents, then the corresponding minor third A-C is narrowed by the same amount; if the major third Ab-C is widened by about 22 cents, then the minor third is narrowed by the same amount. Notice that when the m3 is stacked above the M3 to form a beatless fifth, the beat rates of the thirds are in the ratio of 3:2; when the M3 is stacked above the m3 to form a beatless fifth, the beat rates of the thirds are equal.

The very last observation leads us to a useful test for fifths, the m3-M3 test shown in Example 9. In this test, if the beat rates of the m3 and M3 are equal, then the fifth is beatless; if the M3 beats more slowly than the m3, the fifth is narrow, whereas if the M3 beats faster than the m3 the fifth is wide.

An even better test for fifths is the M6-M10 test shown in Example 10. (For



the beat rate of the M6 equals the sum of the beat rates of the M3 and P4.

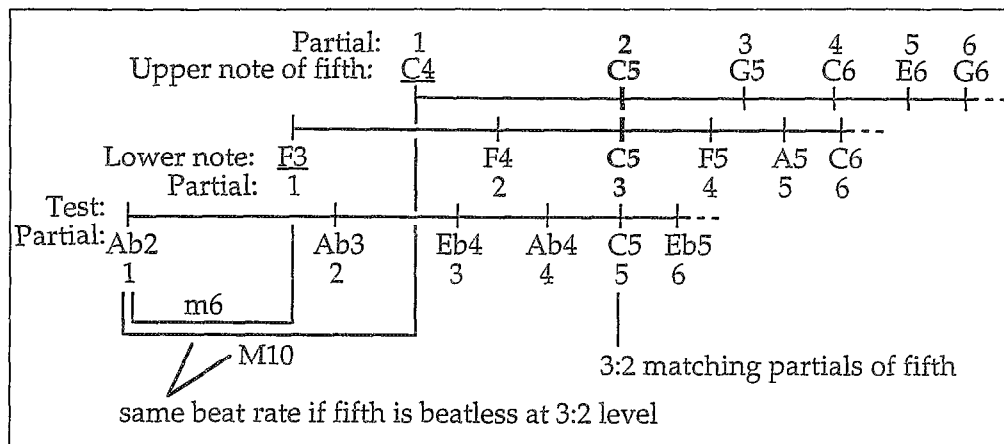
The M3-M6 test shown in Example 11 can be used to check for beatless major thirds in meantone temperament, for beatless fourths in well temperaments, or for expanded fourths in equal temperament. When the P4 and M6 beat at the same rate, the M3 is beatless. When the M3 and M6 beat at the same rate, regardless of the position of the lower test note, the

Example 9 - m3-M3 test for 6:4 fifth

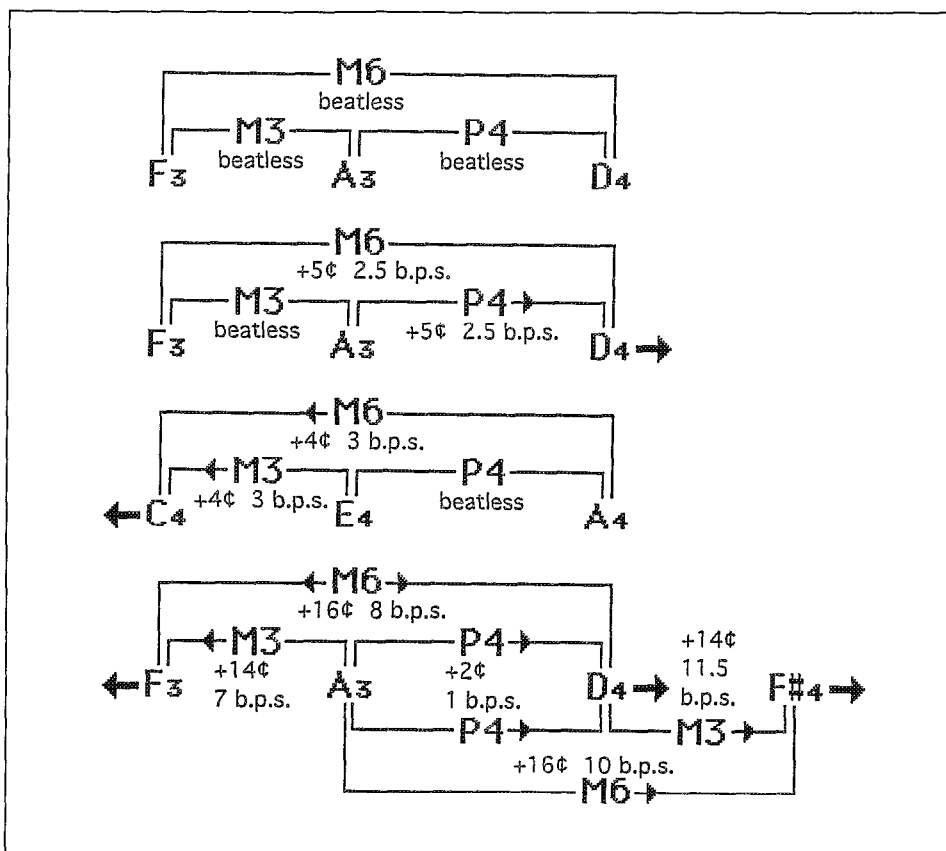
beatless fifths in well temperaments, the M6 and M10 should beat at the same rate.) The test note here is an octave lower than the test note in Example 9. The matching partials are also an octave lower than in Example 9, and the beat rates are thus slower and easier to hear. Just as we often hear octaves beating at several different rates simultaneously in the bass, we similarly hear fifths beating at two different rates simultaneously in the tenor: whereas the m3-M3 test focuses on the higher, weaker and more rapidly beating partials, the M6-M10 test focuses on the lower, more prominent and more slowly beating partials.

The last part of Example 8 illustrates the interaction between the fifth and thirds in equal temperament. Since the major third is widened by about 14 cents and the fifth is narrowed by 2 cents, the minor third is narrowed not only by the 14 cents of the M3 but also by the additional 2 cents of the fifth, for a total narrowing of 16 cents from beatless. When we use the M6-M10 test in equal temperament, the sixth should beat about a half beat per second faster than the tenth.

The interaction of the perfect fourth with major thirds and sixths is shown in Example 11, which is similar to the earlier example illustrating the fifth and thirds. When all intervals are beatless, then $5/3$ (the M6) equals $5/4$ (the M3) times $4/3$ (the fourth). When any interval is widened, then the width of the M6 equals the sum of the widths of the M3 and P4 in cents. If the P4 is stacked above the M3, then



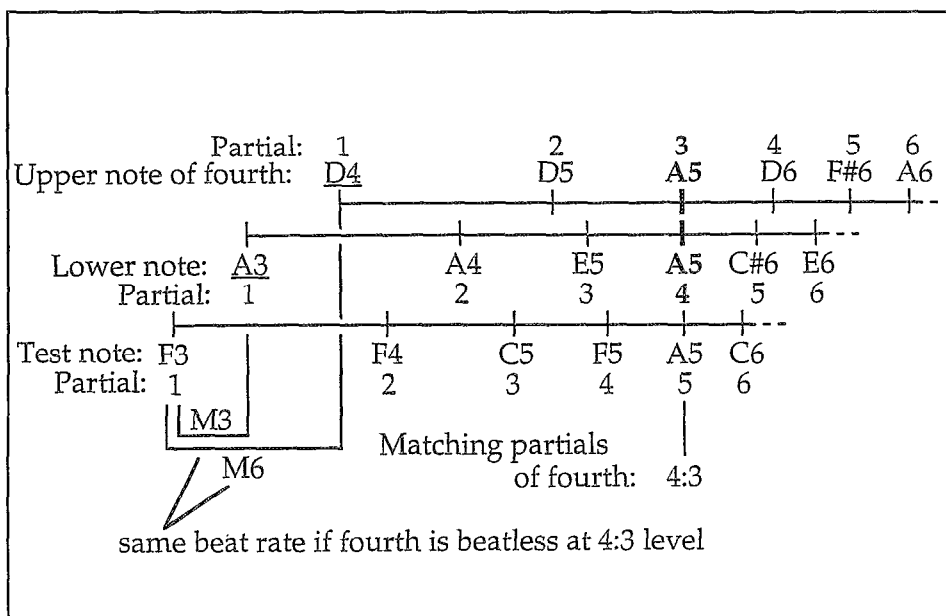
Example 10 - m6-M10 test for 3:2 fifth



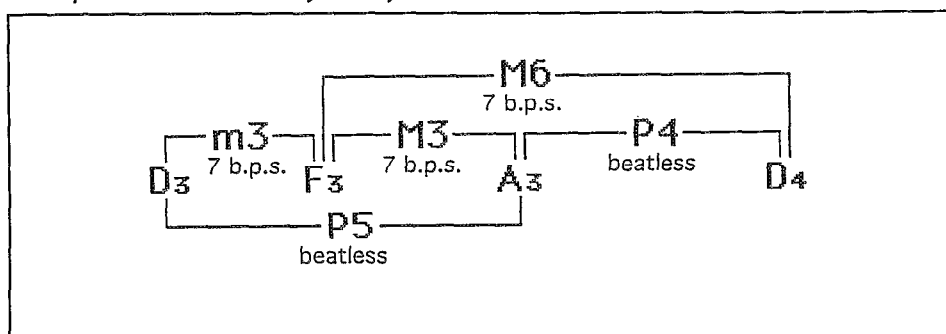
Example 11 - Interaction of P4 with M3 and M6

P4 is beatless. If the M6 beats about one beat per second faster than the M3, regardless of the position of the lower test note, then the fourth is good for equal temperament. In equal temperament an additional M6-M3 test can be employed, using an upper test note a major third *above* the upper note of the fourth. If the upper test note is tuned approximately to its correct position for equal temperament, then the ratio of lower test M3-M6 beat speeds should equal the ratio of upper test M6-M3 beat speeds — in other words, the beat speed increases in the two tests should be about the same when the fourth is “in tune” for equal temperament.

To summarize, intervals interact with the octave to form pairs of inversions: P5-P4, M3-m6 and M6-m3. In the case of a beatless octave, if one interval of a pair is expanded, its corresponding inversion is narrowed by the same amount in cents. Further, if the “minor” interval (m3, m6 or P4) is on the bottom of a stacked pair of inversions, the two intervals have the same beat rate (either approximately or exactly, depending on the “stretch” of the octave), as in the pairs m3-M6, m6-M3 and P4-P5; these pairs of equal-beating intervals form the basis of aural tests for 6:3, 8:4 and 4:2 octaves respectively. In a similar



Example 12 - M3-M6 test for 4:3 fourth



Example 13 - m3-M3 inverts to M6-M6

manner, pairs of major and minor thirds stack to form a perfect fifth, in the order of either M3-m3 or m3-M3;

when the minor third is on the bottom, the two thirds have the same beat rate when the fifth is beatless. This test for the fifth can be improved by transposing the middle or “test” note down an octave, forming the M6-M10 test for the perfect fifth. If the bottom note of the group m3-M3 is transposed *up* an octave, a new group M3-P4 is formed; the m3 is thus inverted to a M6 which contains the new group, as shown in Example 13. In the new group, the M3 and M6 have the same beat rate when the fourth is beatless. The M6-M10 and M3-M6 tests can and should be used to gauge or check the amount of tempering of the fourths and fifths in equal temperament. Familiarity with these tests, together with the tests for 6:3 and 4:2 octaves, is as important as hammer technique in the creation of a good piano tuning.

Next month we shall explore interactions involving chains of like intervals.

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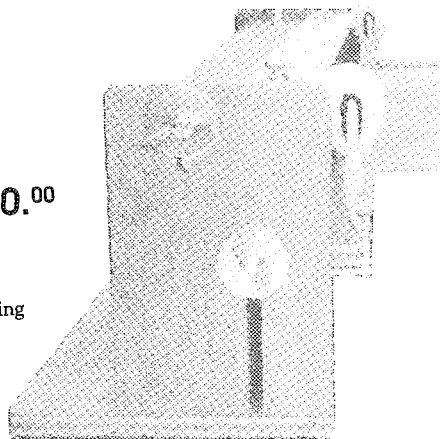
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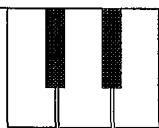
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Probably the most recognizable symbol of our work is the most abused part of the piano. Those tortured and tickled ebonies and ivories, subjected to years of greasy fingers, spilled drinks, dropped pencils, pens and crayons and innumerable other objects which somehow manage to drop deep into the bowels of the keybed; the cigarette burns, the easy-to-remove stickers that identify middle "C".

I refer, of course, to the keys. While we hope the tuning is regularly maintained, the poor keyboard gets years and years of use with a minimal, if any, tender loving care. This allows us an opportunity to provide a worthwhile service and to generate a little income to boot. So let us investigate the wonderful world of key repairs!

What you see ain't all there is

Remember that a key is more than the visible covering. It contains:

1. Keytop—Check for cleanliness, cracks, looseness, worn areas, discoloration, chips.

2. Key front—Think of this as a separate piece; more times than not it is. Watch for cracked, painted, missing and/or loose fronts.

3. Bushings—I know this is supposed to be about recovering keys, but this can be a most necessary and vital "key" to "recovering" an otherwise sloppy and unresponsive set of keys. Check both the bushings and the key pins as well. Sometimes the key job ventures out into the piano proper. Check for worn surfaces, missing bushing felt, "the wobbles," rust, dirt, etc.

4. Key buttons—This might be item 3A, but the fact remains that

sometimes one or more, or *all* the key buttons need replacing. What better time to do the job than when you have the set before you?

5. Balance rail pin hole—the source of *pulley* keys. This area should also include warped keys, vermin-eaten keys, broken keys, and so on. Take the time to fix it *properly* now and save yourself hassle later on. The actual wood used to make the key is subject to the ravages of time and the destructive effects of just about anything you can imagine! Keys were and are made of relatively soft wood such as basswood and sugar pine. These are tasty treats for insects and rodents as well as prime targets for spills guaranteed to warp, twist or swell the wood out of alignment. Check for cracked, broken or improperly repaired keys and correct the defects. The smallest detail left *undone* will stick out and ruin an otherwise marvelous piece of craftsmanship!

6. Key Felts—Check such things as grand damper lifter felt, backchecks (and wires), as well as the obvious keybed felt. Figure if it touches the key, it is fair game and worthy of our attention.

7. Other—Watch for loose or oxidized key leads. No better time to correct this than now. Oxidation of the key lead can do little or no damage to the wood, *or* it can split the thing into spaghetti! Remove loose leads and

The Keys To Success

Part 1 of 2

Bob Bartnik
Richmond Chapter



make repairs if you see splits in the wood. Inject glue and clamp until dry. Try the superglues here. They really make for a quick job. Whatever type glue you use, clean any excess from the key lead hole before inserting the replacement lead. Insert the new lead and swage it into position with a punch, nice and tight.

The thing about key work is that it is so easy to branch out to other areas of piano work. Now that you have the keybed exposed you can check and replace missing and/or damaged felts, clean and lubricate key pins, adjust glide bolts on grands, clean capstan screws... you get the idea.

8. Cleaning—Sometimes a simple cleaning will give stellar results to an otherwise dull looking keyboard. Choose your products and methods wisely. Different materials require different methods and/or cleaning products. No matter how "new and improved" the cleaning product says it is I still believe in the power of plain soap and water. A slightly dampened soapy rag does the trick more times than not.

Tip: *Think total package and finished results/product.*

Recovering keys

And now for something completely different. Take a deep breath. First, don't take things too seriously. Enjoy the experience of recovering keys and you may find yourself having fun! The secret to successful key work is to pay attention to detail but don't let it stress you out. Take each step as it comes. You can get out of anything you get into, so no mistake short of using the keys for kindling is cause for panic.

Get a set or two of junk keys from pianos that are heading for the dump. Treat them as if they were customer keys: attitude is half the battle! Practice on these "throwaways" and experiment to get the hang of each step and motion.

Recognize that each type of key covering has its own foibles and peculiarities. Some are brittle and will chip if you rush the trimming process. Some are much softer, so they cut quickly with the same pressure that might barely cut another type material. I keep notebooks all over the shop and encourage my people to keep a record of their observations, questions and experiences. With these at hand they can refer back to notes taken which refresh memories before committing to a course of action. This practice saves time and money.

Look for new methods and materials. Nothing makes this work more exciting than seeing the fruits of someone else's labor transferred into our wallets! Pick the brains and resources of your fellow piano technicians. Ask to look through their back issues of the *Journal*. I have access to back issues almost from the inception of the Piano Technicians Guild. I use my copier and scanner to make "specialty" notebooks on specific subjects. Information is but a page or two away to refresh my memory on a method or technique or jig. So don't start out by limiting yourself: take advantage of all the great help and material that is out there.

Selling the job

A good salesman uses his knowledge of the subject and/or materials along with creative use of samples, mock-ups, handouts, etc. With a little ingenuity you can inexpensively create a good and effective selection of point-of-sales samples to help convince your customer.

I made up a group of multiple-octave keytop samples glued to a piece of thin webbing. These keytops represent both the variety of keytops I offer (gloss white; satin white; medium ivory satin; yellowed

ivory; etc.) and allow the customer to actually *see* what the keys will look like without risk or peril! The webbing allows you to slide the backs of the keytops over the existing keytops and give you a two or three octave view. Slip in one, then another until the customer decides on which keytop they want. Cost to you: "sacrificing" several sets of keytops and a couple of feet of webbing. I glued mine on with contact cement and they haven't failed in five years. When the demonstration is finished, I roll 'em up and stick them in a case for future use. An occasional cleaning keeps them pristine and ready for years of service.

Make your presentation to the customer with confidence and be prepared with prices, choices, and time required to do the job. By the way, there is no rule that says you have to take every recovering job you come across. If you have any doubts or are unsure of yourself—*pass on it!*

Look like a professional

Just as personal appearance is your first link to professional presentation of your skills and abilities, the work you will do should look like you've done it before! *Please* get a special box for keys. Unless you like using "Safeway suitcases" as a sign of your professionalism, it would pay to buy a case to transport keys to and from the job. Check the supply houses: they carry cases that work great and are relatively durable and inexpensive. Mine has seen a lot of action for some two decades and just keeps on doing the job. I do many sets of keys, but only need one case for pickup and delivery. Once in the shop, I plunk 'em in some old cardboard boxes for the various work stations they go through.

After final inspection I paper wrap the finished keys in groups of six and seven to give an even more professional, "finished" look to the job. The wrapped, finished product is placed in the delivery case on the day they are to be installed in the piano. Class all the way!

Tip: Think of recovering keys as two jobs: naturals and sharps.

Identify the material

Before you begin to remove the old keytops, identify the type of material originally used. Over the years a variety of substances other than ivory was used. Once you have identified the material, you can choose the method of removal prior to recovering the keytops.

One demonstration I like to give at technicals is about the differences in keytop materials: what I call my "fire drill" demo. I start off with a question "has anybody ever heard the phrase "hot under the collar?" I then describe the various types of materials used, from real elephant ivory, celluloid covers, ivorine, pyralin and the other modern versions and variations of plastics.

I then proceed with the demonstration by asking "What does a deck of playing cards, dynamite, men's celluloid collars, silent movies, and piano keys have in common?"

At that time I strike a match and ignite a small amount of black powder in a metal pan that goes up in a blinding flash of light, smoke and smell! It is subtle and spectacular at the same time.

I then answer the two questions: men's collars from the gay nineties on up were made of celluloid strips, nice and stiff and shiny. Smoking tobacco, most commonly in the form of cigar or pipe, sometimes let off a profusion of sparks that landed on the collars of the smoker. The red-hot cinders ignited the unfortunate person's shirt attachment leaving the appearance of a person smoldering from the neck, hence... *hot under the collar!* The celluloid material used in these various items (and a variety of others) all used a variation of the material used to make dynamite: Tri-Nitrocellulose-Toluene!

The reason for this bit of hokem is to demonstrate the danger that old keytops represent. The key coverings on the old family heirloom may be highly flammable and if

ignited, burn savagely, giving off noxious fumes and thick, billowing smoke. This danger increases as the material ages and deteriorates. A careless cigarette could mean the difference between the life of the party and the life of the party, if you follow my drift. The newer materials are a safer alternative, greatly eliminating or vastly reducing most of these hazards.

Tip: Any opportunity is a good opportunity to sell a service or demonstrate a new product -- carpe diem!

Before you start, number 'em

The job begins like most service repairs with the disassembly of the case. Use your normal care and good sense in this process.

If possible, use a vacuum cleaner to get the surface dirt off the keys before you begin taking them from the keybed. I get a big chuckle from my customers as they profess shock and chagrin at the layers of dirt and debris on the keys. I calm them by jokingly saying that they too would be covered in dirt if they hadn't been bathed in sixty-odd years! I prefer to do the cleaning myself, as I've had too many felt punchings sucked up by well-meaning but nervous customers.

It is a wise technician who has a brush to clean a spot to write the numbers. Number *all* the keys (1-88) clearly and in pen or marking pen, *before* you remove them from the piano. Do *not* number with a pencil -- pencil fades and can rub off. Pick a spot behind the key buttons, so even if you recover the keys and install a new set of buttons, you will not sand off a number. If you are planning on bead blasting, it may be advisable to number the keys on the bottoms as well.

Keep sets together for both convenience and peace of mind. Nothing is more stressful than recovering a set of keys and winding up one key short! This should have been caught in several stages in the recover-

ing process: at pick-up; initial removal of keytops; trimming and notching; installing new covers; shaping and filing; buffing and final inspection and packaging. Each stage is an opportunity to lose something *and* to check for accuracy.

Meanwhile, back in the shop...

Have a good work area set up for key work. Crowding yourself in too small a space could result in more

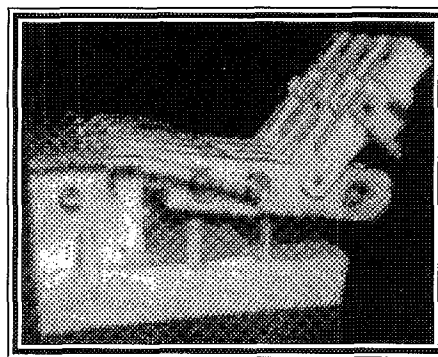
problems than you need. Spread out. When in full swing you will require enough space for the set of keys *waiting* to be recovered, the *recovering* area, and the space for the *recovered* keys to dry. Lay out your work and get your materials and tools lined up accordingly.

Once you have your keys securely bound or laid out, take the time to brush them off and/or blow them off with your air compressor. Wear a dust mask! The "dust" on the

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keys can be composed of everything from rodent droppings and carcasses to who knows what! Take care about breathing this concoction, as it could prove hazardous to your health. If possible, blow the keys off outside.

Measure key thickness

Get a pad of paper and a pen, calipers *and* a micrometer. One thing I've learned is they originally built keys in certain dimensions, so we probably need to repeat those dimensions for the best possible results.

Measure twice and cut once is a woodworker's maxim we can wholeheartedly adopt. Mistakes you make must be repaired, and that means less profit. Take measurements on three or four keys for averaging. Use the calipers to measure the thickness of the keys *with* the original keytop material in place. Pick a spot near the end of the key you can

duplicate over and over again. This will help insure a degree of accuracy. I try for a spot just back of the keyfront and before the edge of the front rail key bushing.

Next, remove the keytop material and measure the key, without top, with the calipers. Now measure the old keytop material with the micrometers. If necessary, clean the back of the keytop of old glue etc., so you can get a good reading. Add the two measurements together and you should get approximately the same reading as a key with the original cover intact. Minor variations are the reason for averaging off several keys.

With these measurements taken and an average determined, you now can take a micrometer reading of the new material you are going to use. Subtract the two and this gives you the amount of wood you must shave off the key to replicate the original dimensions of the covered key. You

are now ready to remove the old keytops and prepare the surfaces for recovering.

Removal: Do I need an "iron" supplement?

The type of material covering the key will determine what method to be used for removing the key coverings. The following chart will help you decide what to use and if you can salvage any reusable materials as a byproduct:

Hot iron on damp cloth = steam
real ivory (salvage)

Hot iron = dry heat
plastic or real ivory (scrap)*

Sharp knife** = cold
some plastics and celluloid

* (be careful of fire hazard)

** (watch for wood rip out)

Not all keytops will come off easily, even with a variety of methods. You must look for such tell-tale signs as previous "repairs" with unknown glues; sometimes more than one. It is not uncommon for some wood separation to accompany the removal of old keytops. Use care to limit the loss of wood as you might be required to replace it before proceeding to recovering that key. On the other hand, don't be afraid of giving the material a little extra pressure to remove it. As a rule I usually try to remove the keytops with a sharp knife before any other method is tried. I try both at the front of the keytop and at the back, wiggling the knife until I get under the cover. With a rocking and rolling motion I *pry* the top off instead of cutting it. If you try to cut it off, invariably you will cut down into the wood. If the covers won't pry off, or you begin to go down into the key, stop, then go to another method of keytop removal.

I buy old reconditioned irons from the Salvation Army for about five bucks a pop. They provide my heat source for removing old keytops and are easy to clean with sandpaper.

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Sometimes I wrap the sole plate in aluminum foil to make a disposable surface, but it really isn't that big of a deal.

Practice with the temperature control on the iron. Mark the position of the proper settings for removing keytops. If the iron gets too hot and the old material melts and sticks to the sole plate of the iron, I haven't "ruined" an expensive tool. Take care not to start a fire by igniting the old key cover. Don't take a break and leave the iron unattended on top of a couple of keys, and watch your heat temperature.

Placing my keytops in line, I remove the tops with heat and a slightly dampened rag, about three or four keys at a time. As I pull one to remove its top I put another one under the rag to begin steaming the top loose. I repeat as needed until done. If I don't care to salvage the top materials I just place the hot iron directly on the keytops and "toast" them until a few sliding strokes with a sharp knife pops them off, usually in crispy brown fragments: Warning: heated ivory is *hot!* I know this sounds silly, but everyone seems to be taken aback when a sliver of hot ivory lands on their arm and burns them. Take a little care and wear protective eye glasses or goggles and sleeve protectors and aprons.

Plastic and celluloid keytop removal is similar to ivory removal, except I rarely use steam. I go directly to dry heat. To keep the sole plate of the iron from getting all gunked up, sandwich a piece of aluminum foil across several keys and the iron. Keep an eye on them, and with practice and experience you'll know just how much heat for how long to get those buggers to just roll off with a knife. The heat should be enough to soften the plastic but not make it molten.

I've used scrap rags and melted plastic keytops to where they stuck to the material... sure the old tops pulled off, but what a mess! I really can't say I prefer this method, but feel free to experiment.

When it comes to removing the key fronts, I treat them exactly as I

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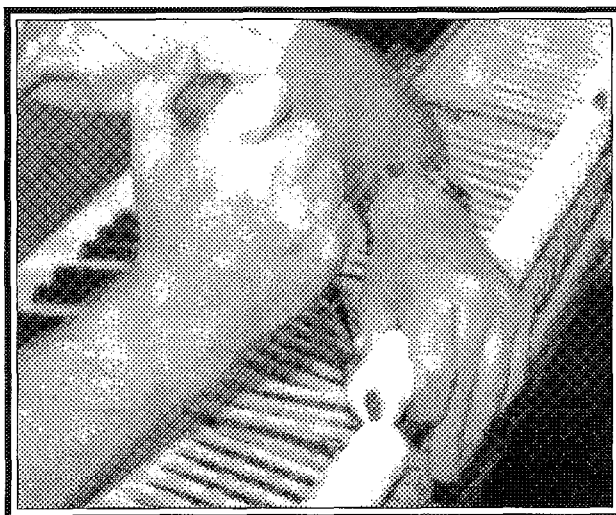
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would keytops. A dab of steam or heat and a little gentle persuasion with a knife blade and they generally pop off with little or no complications.

You may experience difficulties at first in removing keytops and fronts, but practice will bring confidence. Knowing when to back off and

try another method is the difference between the novice and the master, the seemingly endless and profitless job and the successful and profitable recovering adventure.

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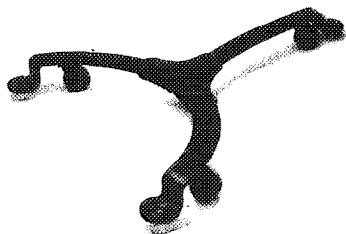


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Sharp restoration, refinishing and removal

Sometimes the recovering job will be (or will include) black key replacement. Sometimes they only need to be repaired and/or refinished. If you have followed previous instructions you already have them numbered. If replacement is in order, measure the sharps for length and width and buy a set to match.

Removing old sharps has always been one of those jobs I've enjoyed doing over the years. It is one of the few times I get to take out my frustrations by whacking away at the work in progress! Grasp the sharp with the flat edge facing down. With a smooth motion deliver a sharp *flat* blow on the edge of your workbench and the sharps just seem to take wing and fly off! The majority break cleanly along the glue line requiring only minor sanding to produce a smooth surface to glue on the new sharp.

Sometimes the magic works and sometimes it doesn't. Sometimes stubborn sharps break into several shards and leave a portion on the keyblank. A few moments with a sharp chisel or knife will remove the splintered remnants and a quick lick on the belt sander will produce a good work surface.

Sharps may only need cleaning or mild sanding and refinishing. I clean them with a Scotchbrite abrasive pad to get the surface dirt under control. Various grits of wet or dry sandpaper from 220 through 320, 400 to 600 is used, depending on surface condition, to produce a smooth, paintable surface. The surface reaction to the sandpaper will tell you whether or not to use water as a lubricant: if the surface seems to gum up under the heat of friction try a little water.

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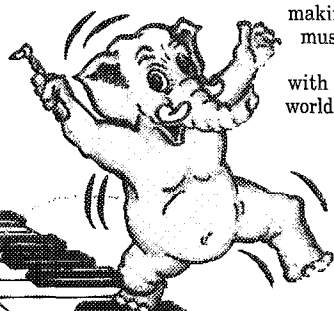
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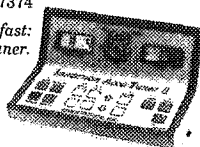
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lacquer sanding sealer followed by a light, stipple-removing sanding between several coats. Once a good base is laid down, I can proceed to spray several coats of high gloss black. Follow directions on the cans for proper application and drying time, and the results speak for themselves.

I keep a special board for sharp painting. Basically, it is nothing more than a scrap piece of pegboard with a one by one frame around it for support. I have glued a bunch of wooden tuning pin bushings onto hammer shanks about a third of the way up. They act as upright spacers to keep the sharps from toppling over onto a neighbor when sprayed. If the spacing is too tight I merely pull a bushing and shank "assembly" and place it where needed. When not in use I shove it under a workbench. When in use it fits across a trash can or a couple of sawhorses. Nothing fancy, just functional.

We should now have our keyblanks, both naturals and sharps, ready to be resurfaced prior to recovering. *Next month: preparation, notching, surface repairs installation, adhesives and more.*



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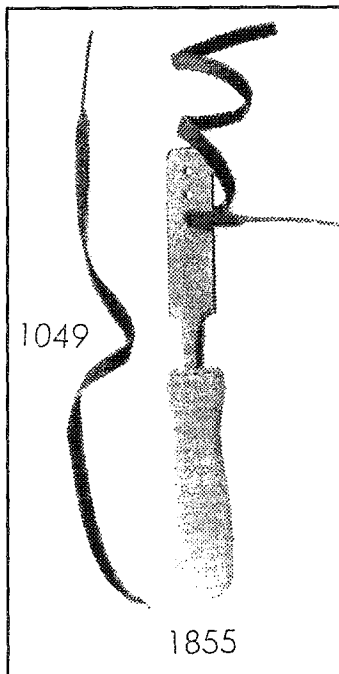
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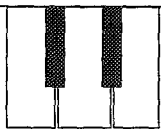
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Technostuff

Q: A customer in my area has a 1918 upright that spent its formative years in Cuba. Many tuning pins are now unable to hold any tension on the strings. Should this piano be repinned (with or without new strings), rebuilt with a new pinblock, or composted?

A: Pinblocks lose their grip in two ways:

- normal enlargement of the hole due to seasonal changes; and
- structural damage caused by cracks, delamination, and contamination.

Normal enlargement of the tuning pin hole, and the subsequent loss of friction holding the pin, is a result of damage to the wood cells in the block immediately surrounding the tuning pin. In damp seasons or environments, the moisture content of the wood in a block increases, and the cells in the block swell. Those cells that swell, or are pushed by neighboring cells, against a steel tuning pin will crush and lose their elasticity. In dry seasons or environments, the moisture content of the cells of the block decreases and the cells shrink. Because the cells next to the pins have lost their elasticity, they stay crushed or compacted as their neighbor cells pull them away from the pin, and the hole effectively increases in diameter.

Structural damage to a pinblock occurs as:

- cracks along the grain of a ply;
- delamination of the plies within the block;
- contamination of the block/pin interface.

Cracks and delamination are a result of:

- original block construction, including:
 - (a) inappropriate choice of wood
 - (b) improper drying of wood prior to glue-up
 - (c) failed or faulty gluing
- severe environmental stress, such as water or heat;
- physical damage caused by:
 - (a) driving pins without supporting the pinblock from below
 - (b) poor fit of the block to the plate flange
 - (c) overpinning (forcing too large a pin into too small a hole).

Symptoms of structural damage to a pinblock include:

- significant loss of tension in one string of a unison, or one monochord in the bass, while neighboring strings are at full tension;
- loose tuning pins forming a pattern, usually a line, sometimes tapering in looseness (indicating a growing crack);
- visual signs of cracks or delamination on edges or face plies;
- staining in the tuning pin area.

Pianos that show no signs of structural damage can be repinned (replacement of the tuning pins with larger diameter pins), but keep in mind the following points:

- Pianos with good quality original pinblocks most often get to the point where they need repinning at an age where they also need other work. It becomes a matter of where to stop. If you're going to repin, you might as well restring, and if you've got the wire off, you might as well pull the plate and fix the soundboard and bridges (which most likely need it by now), and have a good look at the

pinblock to verify that it's repinnable. Remember, if you replace 2/0's with 4/0's today, when the piano needs strings in a few years the next technician has to use even bigger pins or replace the block.

- Pianos that need repinning before the wire needs replacing most likely have a poor quality block that should be replaced. Repinning would be temporary and would most likely lead to structural damage.

What to do about that piano that's lost its grip?

Lost My Grip

Richard Anderson, RPT
Feature Writer
Chicago Chapter

1. Evaluate block for signs of structural damage. If necessary, consult someone who's had experience correlating what blocks behave like *before* unstringing with what blocks look like *after* the

plate's off.

2. If no structural damage is found:

First choice — repin and restring (don't forget all the good stuff that goes along with restringing besides swapping the wire).

Second choice — repin only if the customer understands the long-term consequences, particularly the duplication of effort and expense when it's time for new strings.

3. If structural damage is found, don't despair! It's not that difficult to replace a pinblock in most uprights, and if the action and case are good, it's less expensive to replace the block than the whole piano. Also, many rebuilders are reporting good success in repairing blocks with structural damage (that haven't been contaminated) using techniques that involve low viscosity adhesives. It works wonderfully for blocks that can't be easily replaced and is very cost effective.

Muting The Piano

Paul Monroe, RPT
Orange County Chapter

The purpose of this series of articles is to reach out to the inexperienced tuner and help create a good foundation on which to build a profession.

There are many methods of muting a piano. Through the next few years you will probably experiment with several methods attempting to find the one that you like best. To save confusing you at this point by describing several methods, I will give you the method I use.

You will need the following material and tools: medium action cloth or abstract cloth. They will be in 1 inch strips. Cut in half the full length leaving two 1/2" strips. Presently I use two strips on a vertical and three on a grand.

Rubber mute with a metal handle (See Figure 1). I suggest you tie a length of flange cloth to the handle about 12" long. If the mute slips

behind the action, it is easier to find and remove.

Strip mute inserting tool. You can use a thin blade screwdriver such as used in the combination handle. Some technicians use a stiff piece of metal such as a spring steel the thickness of a soundboard steel, 1/2" x 6" long. If you use spring steel, I suggest you attach a wooden handle to one end, leaving an inch or two exposed. There are many methods of attaching a wood handle so I'll leave that problem in your creative hands.

Make sure the tool you use to insert the muting strip isn't thick enough to cause the strings to move on the V-bar in the vertical or the capo bar in the grand.

Start muting at the top of the

treble end of the piano and proceed downward. The first strip should take you through the treble section to the tenor break. This depends on piano design and how large you make the loop over the unisons. (See Figure 2). The loop must be high enough to allow the middle string of the trichord unison to vibrate freely.

As you progress through the treble section and pass by the first damper, depress the sustain pedal to lift the damper off the string. It will prevent possible damage and give longer life to the dampers. This is especially true of the bichord and trichord damper felt.

If the dampers are in their rest position and you move the string by pushing in the muting strip (and you will) you will damage the trichord and bichord dampers by crushing the felt. (See Figure 3). Take time to be careful and be a craftsman.

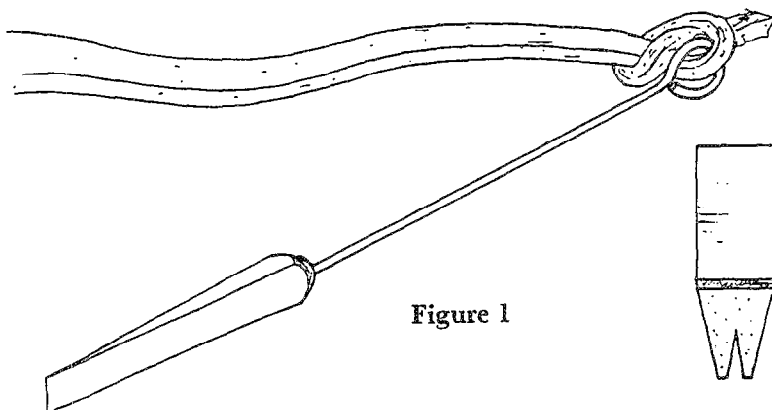


Figure 1

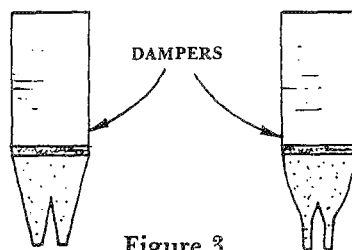


Figure 3

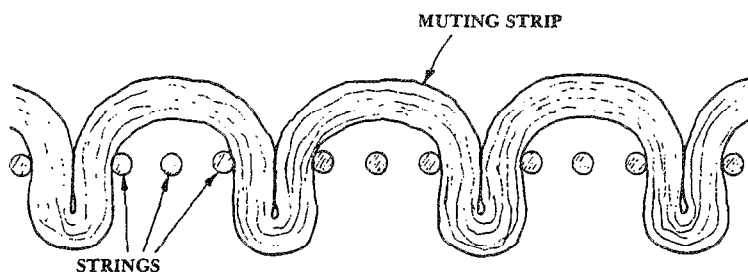


Figure 2

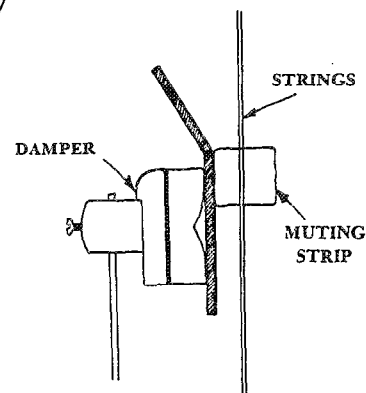


Figure 4

With the muting strip inserted in the treble section, you will find some pianos that the hammers will hit the felt strip. To eliminate this problem, depress the sustain pedal, reach in to the damper heads, pull towards you and with the other hand push the muting strip down and behind the damper felt. Be extremely cautious and do not damage the damper felt in the process.

Some technicians have fabricated a metal strip to place behind the damper felt, which would allow you to pull the dampers towards you, push the muting strip down as stated before and prevent any damage to the damper felt. (Figure 4).

There will be a length of the muting strip left over at the treble-tenor break. Slide this piece in between the damper heads as in Figure 5.

Continue muting the tenor section with the second strip, remembering to depress the sustain pedal to lift the dampers off the strings. Also remember to leave one string free in the bichords, as in Figure 6. The reason is simple and obvious.

A helpful hint to those with astigmatism. After you have inserted the strip between the first unisons, count four spaces, push in the mute, count another four spaces, push in the mute, etc., etc. On most spinets (and some consoles) the wound strings are spaced closely and evenly. If you have astigmatism like I have, it is difficult to keep the strings in focus.

The rubber mute can be used on the last unison of the tenor section at the bass-tenor break and for the unisons at the tenor-treble break. I also use it on unison 88, placing it between strings #1 and #2.

On to the grand. The method is similar. Due to the more delicate nature of grand dampers, it is even more important to make sure the damper felt is lifted off the strings when you are muting the piano.

The only additional tools you will need will be six rubber mutes, 1/2" x 4". These will be placed at note 88 and at each of the breaks. (See Figure 7).

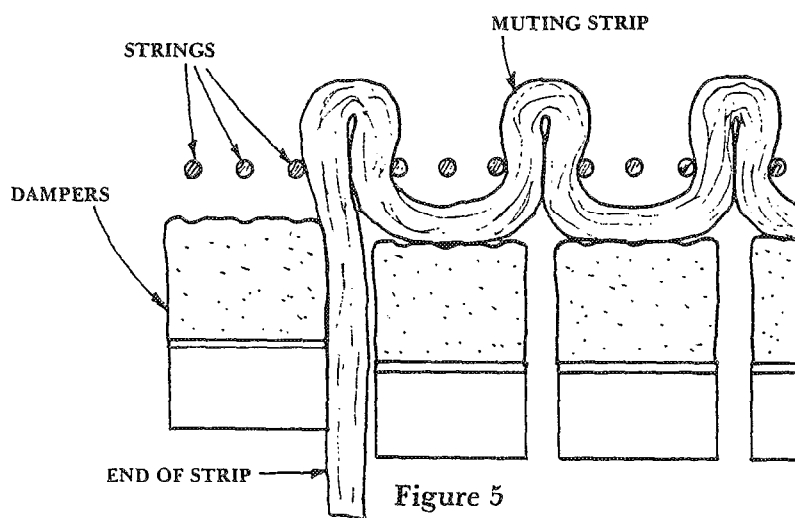


Figure 5

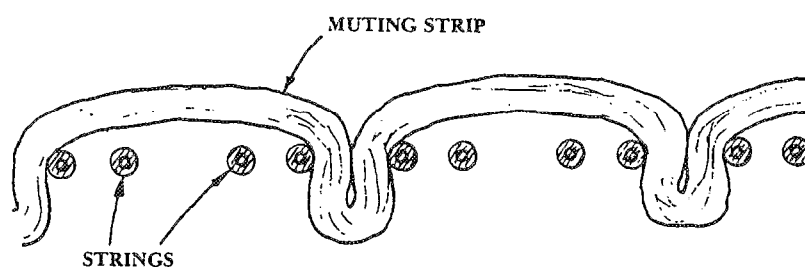


Figure 6

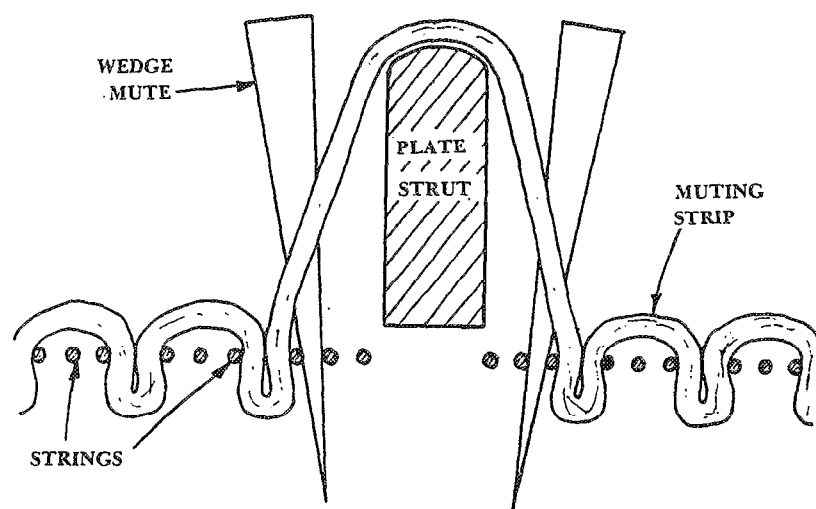


Figure 7

Next article will begin discussion of the temperament.

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Look, an empty page! This looks like a good place to put a piece on benches.

Those of you with more than twenty minutes' experience, and three functioning brain cells, will immediately remember a number of occasions where the bench you were expected to use during the tuning was (or should have been) indeed in pieces. Sorry folks, they can't all be smooth.

Benches (piano calves) are viewed, by me at least, as an unfortunately necessary evil to the process of playing and/or tuning the mother beastie. They are nasty and perverse creatures whose existence is summed up in nuisance value as much as any demonstrably utilitarian use. They come in all sizes, shapes, and degrees of deterioration. One thing they all eventually do, however, is wobble. Witness the wonderful wobble-walking wall whacker syndrome.

This condition is characterized by the victims' tendency toward constant movement, especially when sat upon, and an apparently malevolent attitude toward their riders. In their least offensive moods, they will creak, squeak, and (yikes) crackle when wiggled upon. At worst, they will pinch your fingers, legs, or butt, or dump you into the ornamental cactus strategically placed to keep the bench corralled when not in use.

Time out, time out! All right you guys. I can see from the snickers out there that it's going to be neces-

sary to point out that in the process of tuning a piano, you *do* wiggle on the bench. Admit it and I may not have to resort to producing the negatives. There, that's more like it. Now we can return to our program.

Sometimes the stagger-leggers will respond to a firm tightening of their attach bolts and bracket screws. If you get off that lucky, be good to

your dog when you get home because you have had a better day than he. It won't, naturally, be that easy in the real world. What you will most likely find is stripped screws, split wood, missing nuts, and dowelled joints that have been mysteriously repaired fifteen or fourteen times by the random application of whatever was at hand at the time that seemed to be sticky, and hacked together with a collection of mis-matched hardware that would put NASA out of

business. I say "mysteriously" repaired because the current owners of the bench will not admit that any member of *their* family is mechanically maladroitness enough to have perpetrated such a heinous act on the heirloom bench. At the risk of belaboring a point (I said *no snickering!*) I feel that I must point out here that the piano has been in the family since its birth which can only mean that unknown Gnomes have apparently broken in repeatedly through the years and *fixed* the bench without the owners' knowledge or sanction. Since this is purely circumstantial and conjectural evidence, perhaps the point shouldn't be pressed further.

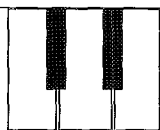
When faced with this kind of coagulatum and roofing patch archaeology, you don't have too many options. The most heavily relied on course of action is to pretend that the bench is just fine and hope it doesn't decide to break under *you*. This works better with the smaller, skinnier tuners

than with large hairy two-hundred-pounders like myself. It is imperative, however, that you stop short of actually *praising* the perpetrated fix. The faking of sincerity at these esoteric levels is best left to professionals, and if you try it and fail... Well, you probably don't really want to know. Alternatively, you can pour or pack another layer of Poly-Tician, or some other industrial sludge, into the joints and hope for the best. Perhaps some packing crate strapping to lash the whole thing together would do the trick. Shame on you for even thinking of such a thing. I hope for your sake that your mother doesn't find out about that.

Since our mothers won't let us fake it, and our customers won't fall for the false praise and resultant easy escape, the only fix left is to drag the bench to the shop, dismantle the scrap metal bracing, blast the *&^%#\$!*@^% out of the joints, and re-glue the sucker. This is all fine for us, (or would be if not for the *&^%#\$!*@^%) but the total cost (including *&^%#\$!*@^% eviction) exceeds the market value of the bench. What to do, what to do? This is the point where the faint of heart (smart?) individual ducks the whole thing by quoting an obscenely low price and referring the mess on to someone who owns real glue but doesn't even have a tuning to buffer the cost of two trips for the repair because the first guy *did* the tuning while he was there. If, however, *you* are the glue owner, you get to try to justify the need for the repair (ducking the customer's disclaimers of responsibility for the pitiful past repair attempts) against the *real* cost of accomplishing same. Isn't this neat! Usually, they are so relieved to be absolved of any culpability in the past repair capers that they are only too happy for you to make the corpus benchi go away and replace it with a newly repaired amnesty special. Now if you only didn't have to actually deal with the repair. Maybe there is a way to get *real* glue to the Gnomes, I mean, it's not like selling rifles to the Indians, or turning your neighbor in to the IRS is it? ...Is it? ...Hello?

BENCHES
BENCHES
BENCHES

Ron Nossaman, RPT
Feature Writer
Wichita Chapter



What Is Service?

Today, we live in a service economy. According to John Naisbitt, a trend analyst, since 1956 our economy has changed from an industrial society to a service society. "Industrial America has given away to a new society." We now live in an America that performs rather than produces.

What is meant by *service*? Economists have traditionally called the service sector an *industry whose output is intangible*. The Census Bureau and the Department of Commerce tell us that the service sector employs about 60 percent of all the working people in the U.S. These people work in four segments:

1. Transportation, communication and utilities;
2. Wholesale and retail trades;
3. Finance, insurance and real estate;
4. Services, such as accountants, engineers, doctors, housekeepers, barbers, piano tuners, and nonprofit organizations.

All four of these groups offers service in the classic *help me* sense. This is the first dimension of the service. Help me with my taxes, help me buy what I need, help me with my money, and help me get well. From a piano tuner's point of view, the help me service is provided when we get the phone call, and someone asks for advice. How much does a new piano cost? Should I buy a used piano? How much do you charge for a tuning? How much do you charge to fix a broken key? We could say that customers who hire us to help them find a piano, or help them decide what kind of repairs have to be made, are also in this dimension of service. The customer needs help, and that is why he/she contacts us.

SERVICE MANAGEMENT

Willem Blees, RPT
St. Louis Chapter

"The capacity to service customers effectively and efficiently is an issue everyone must face.

We must all learn to face the task of responding effectively and efficiently to customers who expect quality service.

The marketplace is opting to do business with those who service effectively and declining to involve itself with those who merely supply a service."

The second dimension of the service sector is the *fix it* service. This is the obvious one for us. Something is broken, and someone has to fix it. It seems that we are becoming a nation of broken toys, and the fix it service sector is becoming one of the most important aspects of our economy. And because we are relying more and more on the fix it sector, consumers have come to expect, and even demand that performance of a product should extend further past the point and date of purchase than ever before. People are expecting products to last longer, and for the repair personnel to make them last longer.

Not only is the fix it service sector becoming aware of the importance of putting out reliable service, the manufacturers are also seeing the importance of "service after the sale." The attitude of "this would be a great business if it weren't for all those damned customers," has proven to be costly, and was perhaps the cause of the downfall of some companies. In our business, perhaps this was in part the reason for the demise of some of the piano manufacturers in this country.

Dealing with dissatisfied customers is perhaps one of the biggest obstacles we have to overcome. We don't want to deal with them, but if we don't, we are neglecting a very important aspect of our business. The lesson we should all remember is that *the complaining customer is our best friend*. Only your best friend would tell you that you have bad breath. It is the complaining customer who lets you know you have a problem. It is the complaining customer who points out your mistakes. And if you didn't correct your mistakes, or took care of your problems, you would lose customers rather than gain them.

The Technical Assistance Research Programs, Inc. (TARP) of Washington DC, did a study on handling dissatisfied customers. They came up with some interesting statistics.

1. The average business never hears from 96% of the unhappy customers.
2. For every complaint received, there are 26 other customers with problems, 6 of which are serious.
3. Complainers are more likely than non complainers to do business again with the company that upset them, even if the problem wasn't resolved.
4. Of the customers who register a complaint, 54-70% will do business again if their complaint was resolved. If the complaint was resolved quickly, that figure goes up to 95%.
5. The average customer who has had a problem will tell 9 or 10 people about it.
6. A customer who has had their complaint resolved satisfactorily will tell an average of 5 people.

The piano manufacturers are getting the picture, and consequently are spending more and more money on servicing their products. The way we are benefitting from that is the time and money the piano manufacturers are spending teaching us how to service their pianos better. The manufacturers have realized that service can play a significant role in the economic well-being of the company.

The third service dimension is the *value-added* service. Value-added service is more or less the civility aspect when dealing with customers on a face-to-face basis. Value-added service, though, is more easily understood in experience than in definition; you know it when you see it.

It is "customer-focused service." It is the little extras you do for a customer that make the difference between ordinary service and extraordinary service. As new technology is introduced into our society, there is a counterbalancing human response. The more we are faced with

"high tech," the more we want "high touch". The fewer contacts we have with people, the more important the quality of each contact becomes.

What it means for us in the field is that when we go out to tune a piano, it is no longer enough just to tune the piano, collect your check and walk away. In order to be considered a "high touch" service representative we must learn to communicate with our customers face-to-face. We must do a little extra, at no extra charge, and walk away with a smile. The total experience of obtaining service becomes integrated into the real and palpable quality of the service itself.

Which brings us to the fourth and final dimension of service. *Service as a managed endeavor*. Service has always been thought of as being a one-to-one relationship between the provider and the receiver, as being labor intensive, and as having a productivity characteristic not readily increased by capital and technology.

Ronald Shelp, chairman of the advisory committee on service industries said, "While personal service jobs were declining, industrialization was calling forth a whole range of new services. Some of these were the result of new-found affluence, as more and more people could afford more and better health care, education, amusement and recreation. Our services were needed to increase the productivity of production — wholesale trade, information processing, financial services, communications. These services and others like them became highly productive when modern technology supplied them with computers, satellites, and other rapid communications and system analysis.

"Thus service jobs moved away from the low end of the economic spectrum toward the other extreme. Much of the service-oriented job growth has taken place in professional, managerial, administrative, and problem-solving categories. Increasingly, education became the name of the game in service jobs..."

What it means for the piano service industry is two things. First, as was mentioned previously, the more

people are becoming not only service oriented, but also becoming service educated consumers, the better we have to become at doing our jobs. The days of being able to "confuse them with technical gobbledegook" are over. Your customers are going to smell a rat a mile away. You had better know what you are talking about, and be able to back it up with facts and figures.

The second thing is the management aspect of our service. With the technology that has been made available to us, we are going to be able to manage our businesses better and we are going to be able to make use of other service businesses in ways that will help us do our jobs better.

To help us manage our businesses, we need to recognize that there are five types of services that have come to be recognized in this new wave of economic conditions in the Western World.

1. Unskilled Personal Services.

These are the housekeepers, street vendors, janitors, etc. There has always been, and always will be a need for these kinds of services. But even in today's society, modernization and organization has brought some of these services "on line." Housekeepers and janitors are now part of large companies, such as Service Masters International. Street vendors are using computers to keep track of inventory, and are part of a co-op.

2. Skilled Personal Services.

These are the piano tuners, the shopkeepers, and other maintenance and repair people. As with the unskilled services, these are becoming organized, if not into companies, then in association, societies, and guilds, all in an effort to help manage their affairs and careers.

3. Industrial Services. These are really organized groups of highly skilled specialists: accounting firms, hospitals, real estate brokers, etc. It was believed that these organized groups of professionals were on their own. But marketing and management of "professional services" has industri-

alized the industrial services.

4. Mass Consumer Services. As wealth increases, discretionary purchasing power increases. This has given rise to growth in the travel, entertainment, restaurant, and health care industries.

5. High-technology Business Services. The computer has given us a new dimension in services, and it has created another kind of service specialist: the knowledge consultant.

From this perspective, it is obvious that as a society increases in sophistication and wealth, the demand for services outweighs the demand for commodities. As more and more money is being spent on more diversified services, there is going to be increased competition for the service dollar. Today's buyer expects significantly more from the seller than a "take-the-money-and-run" attitude. According to Theodore Levitt, "It is not a matter of just getting and then holding onto your customers. It is more a matter of giving the buyers what they want. Buyers want vendors who keep promises, (and) who'll keep supplying and standing behind what

they promised. The era of the one-night stand is gone. Success in marketing is transformed into the inescapability of a relationship."

Service is an ongoing relationship between the buyer and the seller. This relationship is not a simple contract of trust between two individuals, but a promise of continuing contact between two economic entities for mutual benefit. If you are going to build a piano tuning business, and hope to keep it, you are going to have to think of your customer not just as a Wurlitzer spinet in the living room, but as bread on your table, or the trip to the next convention. And for the client, you are a means of getting enjoyment out of life, or an education for a child. And that results in satisfaction for both of you.

The capacity to service customers effectively and efficiently is an issue everyone must face. We must all learn to face the task of responding effectively and efficiently to customers who expect quality service. The marketplace is opting to do business with those who service effectively, and declining to involve itself with those who merely supply a service.

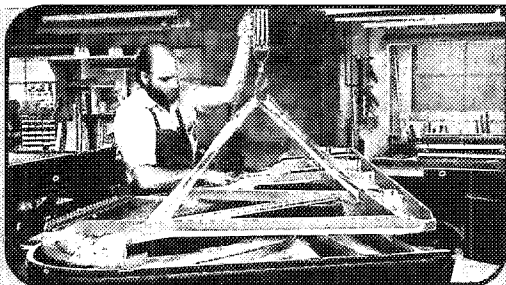
Therefore, you should be concerned with honing a competitive edge for the future. You must be able to think strategically about service, and you must develop the ability to effectively and efficiently manage the delivery of that service. The ability to manage the delivery of service requires a familiarity with intangible economic values, and the ability to conceptualize intangible outcomes. It requires a tolerance for ambiguity, an ease in dealing with lack of direct control of every key process, and an appreciation of the notion that you have to be equally dependent on people related skills and product related skills. And last but not least, it requires a tolerance for, and perhaps an enjoyment of, sudden and sometimes dramatic change.

Information for this article came, for the most part, from *Service America - Doing Business In The New Economy* by Karl Albrecht and Ron Zemke. A Warner Books publication.

To be continued next month.

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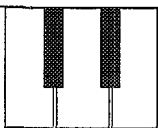
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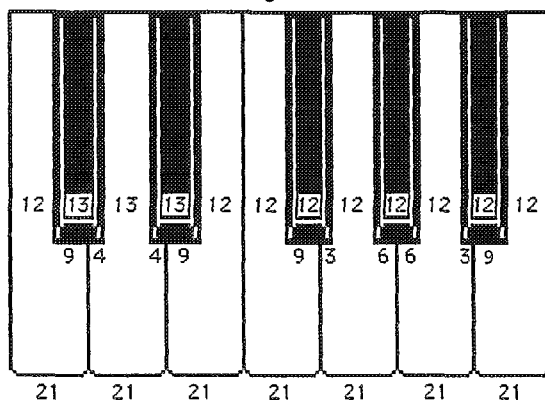
Guest Feature

Every once in a while, I discover there is an advantage to being married to a nerdy type of guy. About two years ago, my husband, Mark Anderson, was designing computer software to teach aural tuning skills. While he was designing the graphics for an on-screen keyboard, he came across a perplexing question: why was it impossible for the black keys and white tails to be the same width? (Or, as many of my fat-fingered pianist friends have discovered, why is the space between C# and D# wider than the spaces between the other black keys?) Fortunately, his desire to design an on-screen keyboard forced him to re-discover the answer. If you are interested in trivia, read on.

The piano keyboard pattern is characterized by the black key grouping of two's and three's. In the same space that there are seven white key "heads" to the fore, there must be twelve "tails" aft: seven white key tails and five black keys. Because of the natural (no pun intended) boundary formed by adjacent white keys (B/C and E/F), the keyboard must be further subdivided into a group of three white keys/two black keys (the C - D - E group) and four white keys/three black keys (the F - G - A - B group).

Since our goal is to have all tails of uniform width, we can assign the variable x to represent the unknown width of the twelve tails. The variable y represents the white key heads, which are already of uniform width but are divided up into a group

Dr. Keyboard



Or How I Learned To Stop Worrying & Love Algebra

Margie Williams, RPT
San Francisco Chapter

of three and a group of four. Here are the equations, which must be worked together:

$$3y = 5x$$

(3 heads in the space of 5 tails/black keys)

and

$$4y = 7x$$

(4 heads in the space of 7 tails/black keys)

Solving for y in the first equation: $y = 5x/3$. If we substitute this for y in the second equation, we get $4(5x/3) = 7x$. Then $20x/3 = 7x$. Multiplying each side by 3 to solve for x , we get $20x = 21x$. Since the product of 20 and a number cannot equal the product of 21 and that same number, we just proved that the tails can't be divided up uniformly.

Since it is not possible to divide up all the tails uniformly, the next best thing is to subdivide the keys into two groups. As mentioned above, there are two natural subdivisions in each octave: the C - D - E group and

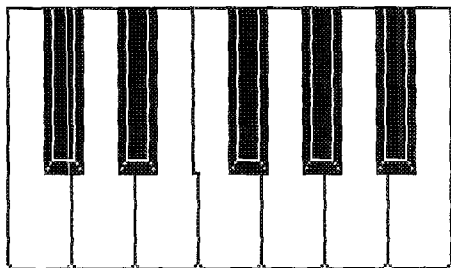
the F - G - A - B group. I have plugged in some numbers (the ones that Mark used to divide up the pixels on a computer screen) so you can see how the math translates into tails of different sizes. (The math also illustrates just how the notches on the heads come out to be different sizes as well.)

The numbers that are paired together directly below the black keys add up to the black key width (either 12 or 13), and the sum of all the numbers on each white key add up to the width of the head, which is 21. If we accept the premise that the heads are all the same width

and our goal is to keep the tails and black keys as equal as possible, the numbers shown on the diagram work out in theory. In practice, there are many ways to divvy things up, as I have discovered.

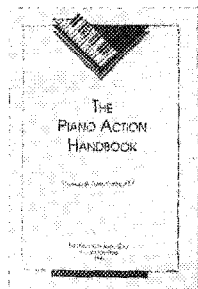
Just for fun (torture?), I measured a modern keyboard and obtained quite a different set of numbers, but they still added up as in the above diagram. (It is excruciatingly difficult to measure a keyboard in this manner — much easier to do on paper!) The simplest explanation is that within each subgroup in the octave, the manufacturer has more than one choice on how to divide up the space into tail and black key widths. Older pianos with ebony tend to be somewhat customized, with black keys as well as ivory tails of varying widths; modern plastic keyboards have to homogenize the black key width and instead must vary only the width of the white key tails.

If the keyboard had evolved into six white keys and six black keys, there would be no difficulty in dividing up the heads and tails. It's the seven and five pattern that causes the idiosyncracies in the modern keyboard. For the perfectionists in the crowd (and I include myself in this much-maligned category), I'll close this article with a perfectly divided keyboard. All the black keys and tails are the same width:



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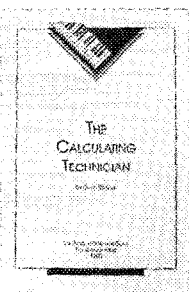


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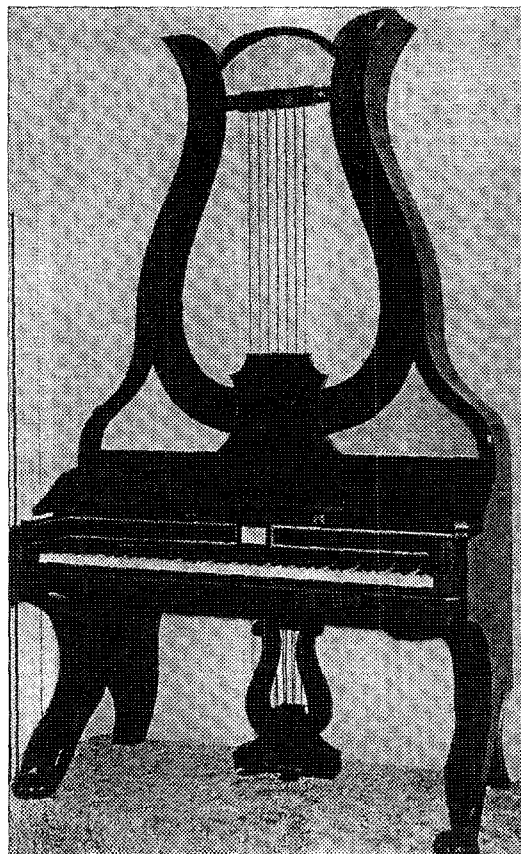
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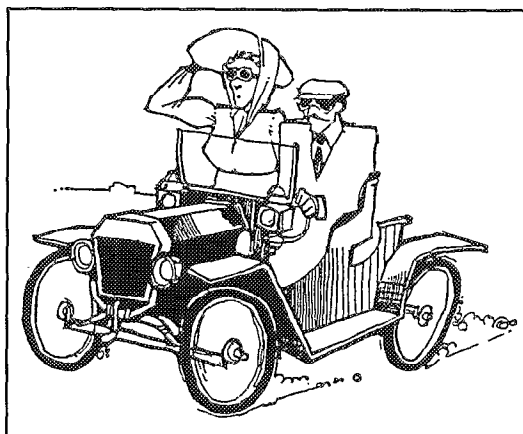
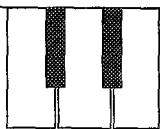
Foundation Spotlight



"This instrument made by F.A. Klein, Berlin, Germany, about 1825; known as 'Lyra-Flugal.' 84 keys, seven feet tall; serial number 14; many manufacturers made this type of instrument; the iron frame (if any) did not go below the keyboard; this also included the strings; later on the inverted grand was introduced where the strings and iron frame went to the floor, the tuning being done from the bottom of the piano. Steinway & Sons, Berlin, Germany, has a similar piano, No. 63, made by F.A. Klein. Piano owned by Helena Lewyn, Los Angeles, California."—from the book *Old Pianos* by N.E. Michel (Rivera, California, 1954). This volume, part of the library of William Braid White, was donated to the Piano Technicians Guild

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

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



The 1993 PTG European Tour

Continued From December, 1993 Journal

The following article is the third installment of the three-part expose on the 1993 European Tour. Parts one and two were written by Yat-Lam Hong and appeared in the November and December, 1993 Journals. This installment is a continuation of those previous articles and was submitted by Greg Hudak of Baltimore, Maryland.

On Sunday morning, with magical memories of Tivoli Gardens still in our heads, we bid farewell to Yat-Lam, and Fred and Dorothea Odenheimer (who were not continuing with us on the next portion of the trip), and boarded the bus to leave Copenhagen. I felt a certain sadness to be leaving the beauty that was Denmark, and the warmth and hospitality of the people there, especially the good friends we had made. However, I also looked forward with eager anticipation to my first visit to Germany.

After an hour or so we boarded the ferry (bus and all) at Reedby and crossed a narrow section of the Baltic Sea to arrive in Puttgarten, in Northern Germany. Although we would be passing very near to Hamburg, we would not be making a stop at the Steinway factory as it was closed for a general vacation period. We stopped at a small roadside "gasthaus" near the town of Lubeck where our "typical" German

lunch of assorted meats, cheeses and bread met with mixed reviews from the group (Larry Crabb complained that his steak tartar was undercooked). Undaunted, we journeyed onward to the city of Braunschweig, home of both the Grotrian and Schimmel piano factories. That evening we were treated to a concert at the Schimmel factory (right in the middle of what is normally the upright regulation department!) featuring a pianist-singer named Konstantin Weber. Weber was described to us as a socialist, and much of his music contained some strong political sentiment, which was heartily applauded by the predominantly young crowd. None of us were conversant in German, so we had no idea of the substance of Mr. Weber's message, however we managed to blend in with an occasional "right on!" and subtly raised fist (I did learn something in college). Chip Wise, one of the American representatives for Schimmel, told us of the previous night's concert there which featured a

performance of *Pictures at An Exhibition* played on FORTY pianos! What a difference a day makes.

The next morning we arrived at the factory, where we were greeted by Knute Grotrian, great-great grandson of the founder. Earlier we had learned that, due to a holiday later that week, both factories would be closed for the entire week (do you detect a pattern here?). Regardless, Mr. Grotrian led us on a tour of the entire factory during which he proved extremely knowledgeable in every phase of the manufacturing process. Although nothing can take the place of seeing the work being done as you go along, there were certain advantages over other factory tours that I've taken, such as being able to hear perfectly every word our host said, and being able to walk right up to the machinery and instruments and inspect them close-up. Afterwards we were treated to a wonderful lunch of schnitzel and potato salad and enjoyed the opportunity to chat with Mr.

Grotrian in an informal setting.

After lunch we reached the Schimmel Pianofabrik, the larger of the two makers. Klaus Schimmel, again conducting us through an eerily quiet factory, displayed an equally impressive knowledge of the entire plant and operations as his counterpart. In both factories I was impressed with the abundance of natural light available by means of huge skylights, and the cleanliness throughout. Later we still had time for a charming walking tour of old-town Braunschweig.

The next morning we boarded our bus and headed for Goettingen, a city in central Germany known for its expansive university. We got to spend a pleasant couple of hours there "on our own recognizance," taking advantage of Goettingen's lovely pedestrian streets by shopping, strolling and taking photographs.

From there we traveled towards Eisenach, a small town just across the border of what was formerly the Democratic Republic of Germany. Although no ostensible marking can be discerned in crossing from West to East, some obvious differences in quality of life soon became all too apparent. Much of it was in a state that can only be described as "neglected" (as we say of the fifty-year-old grand that has never been serviced). However, the construction that seemed to be going on everywhere gave evidence of a much-needed regeneration. There we were joined by Klaus Fenner, who lives only a few miles (oops, I mean kilometers) across the border in the town of Bad Hersfeld. We visited the Lutherhaus, where Martin Luther lived in his later school days from 1498 to 1501. After that we toured the Bachhaus, birthplace of J.S. Bach and now a museum housing several period keyboard instruments, manuscripts, and letters of the famous composer.

On the autobahn again to Frankfurt, where we would have dinner then board the overnight train to Paris. We were in a sleeper car, two to a compartment, and although at the time we felt quite cramped, I later

found out that these were first class accommodations, and that normally people traveled six to a compartment. Actually I thought it was quite fun, as I had only experienced sleeper cars through the movies. At any moment I expected someone like Detective Hercule Poirot to show up at our door saying, "There ees a spy on board, may I sayrsh your r—r—room?" However, the only thing close to that was the conductor asking for our passports as we crossed the border from Germany into France. After a surprisingly sound night's sleep, I awoke at dawn to see the beautiful French countryside go fleeting by our window, as we passed through small villages with buildings that seemed (and probably were) 1,000-years-old.

We arrived at the Gare de l'Est in Paris along with the early morning commuters, and we were met by our tour guide, Thierry. An art history major, Thierry spent the next two days leading us through the labyrinth of Paris sights and attractions, including the artist quarter of Montmartre, with its beautiful church of the Sacred Heart, the breathtaking view from the top of the Eiffel Tower, and the overwhelming Louvre Museum. A quintessential Parisian, Thierry also counseled us on where to get the best deal on changing money, how to guard against pickpockets and where to find free restrooms (a rarity in Paris). Of course a trip to Paris would not be complete without a visit to the Moulin Rouge, where we saw a show called "C'est Formidable," and great it was, complete with chorus lines, vaudeville acts and complimentary champagne.

On the morning of our third day in Paris we were met at our hotel by Jean Lovy, vice-president of AFARB, the French association of piano technicians. Mr. Lovy would be accompanying us to Le Mans, a city about 300 kilometers southwest of Paris. Our first stop was the acoustics lab at the University of Maine, where a great deal of very sophisticated computer-aided research is being done on tone production and musical instrument design. Several students

described their particular projects, and afterwards we were allowed to experience the eerie sensation of an anechoic chamber, which is a room made to be almost entirely devoid of any reverberation. (Great for tuning those pianos with hard hammers!)

After a resplendent six-course lunch at a nearby inn, we traveled just down the road to the Institut Technologique Europeen des Metiers de la Musique, a vocational training school for musical instrument building and repair. There, our host, the director, Mr. Louis Sinigaglia, led us on a detailed tour of the school, which gathers students from all over Europe. The brand new and beautifully laid out facility was most impressive—a central main building surrounded by a dozen "satellite" buildings (round for maximum window exposure), each specializing in a different area of musical instrument repair—one for grands, another for uprights, others for brasses, woodwinds, and so on. Mr. Sinigaglia told us that in each satellite the teacher was responsible for "cleanliness, neatness and discipline." It was evident that each was doing his job very well.

On Saturday, our last full day in Paris, we were free to wander on our own. We were certainly not wanting for things to do, as Paris is a wonderful city with breathtaking vistas, an abundance of monuments and museums and a cosmopolitanism which makes just walking the streets or relaxing at a sidewalk cafe exciting. Our dinner in the hotel that evening took on the air of a farewell banquet, with much relating of anecdotes, toasting, and even a mock "awards ceremony." The next morning we bid each other adieu as we left for our own destinations, some back to the States, other to different places in Europe. We delighted in the good times we shared and the warm friendships we had made, both amongst ourselves as well as with others who had been so kind to us along the way, and we looked forward to an imminent reunion at the PTG convention in Milwaukee.

1994 Events Calendar

March 3-6

PA State Conference
Harrisburg, PA
Contact: Keith Bowman
210 Hamilton Street
Harrisburg, PA 17102
717-234-4475

March 10-12

Pacific Northwest Conference
Seattle Chapter—Bellevue Red Lion
Contact: Randy Rush
2627 NE 86th Street
Seattle, WA 98115
206-525-7601

March 12

Bluegrass Tuning Seminar
Transylvania University—Lexington, KY
Contact: Russell Schmidt
311 Desha Road
Lexington, KY 40351
606-269-4293

April 9

Calgary One Day Seminar
Red Deer College
Contact: Chris Gregg
11444 Coventry Blvd, NE
Calgary, AB T3K 4B1

April 15-17

Central West Regional Seminar
Boulder-Denver Chapters—Boulder
Contact: Richard Capp
3350 Loyola Ct.
Boulder, CO 80303

April 16

East Tennessee One Day Seminar
Knoxville
Contact: Dennis Mayhew
7700 Old Clinton Pike
Powell, TN 37849
615-938-5440

April 23-24

Florida State Seminar
St. Petersburg
Contact: John Ragusa
7318 Ponderosa Drive, Tampa, FL 33637
813-988-0396

April 24

LA Chapter PACE Plus
La Canada Presbyterian Church
Contact: Adam Fiore
414 Second Street, #122, Hermosa Beach, CA 90254

May 11-14

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

May 13-14

Springtime In The Rockies
Provo Park Hotel—Provo, Utah
Contact: Vincent Mrykalo
694 N. 100 E.
Provo, Utah 84606
801-375-2987

May 14

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

July 6-10

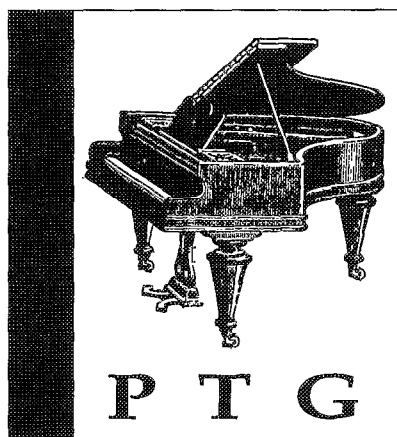
37th Annual PTG Convention & Technical Institute
Kansas City, Missouri
Contact: PTG Home Office
3930 Washington,
Kansas City, MO 64111-2963
Phone: 816-753-7747
FAX: 816-531-0070

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| | 9 | Pacific NW Conference | Bluegrass Tuning Seminar | |
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| | April | | 1 | 2 |
| | 6 | 7 | 8 | Calgary 1-Day |
| | 13 | 14 | Central West Regional | East Tennessee 1-Day |
| | 20 | 21 | 22 | 23 |
| | 27 | New Eng. E. Canada Seminar | | |
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| | 4 | 5 | 6 | 7 |
| | 11 | 12 | Springtime In The Rockies | New Mexico 1-Day |
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| | | | July | | 1 | 2 |
| 3 | 4 | PTG's 37th Annual Council, Convention & Technical Institute | | | | |
| | 11 | 12 | 13 | 14 | 15 | 16 |
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| 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | | | | | | |

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AUXILIARY

E X C H A N G E

Dedicated To Piano Technicians Guild Auxiliary News and Interests

Greetings to the wonderful month of March. Want to know why I like it so well? Because the whole earth is waking up after a long winter's sleep and it's going to sing praises to another wonderful year. (And I get another year older, too.) Do you have cabin fever as badly as I do? I can't wait to get the tractor out and start moving the earth around. The winter nights are so long. Are you on as many mailing lists as I am? I guess I put myself on all these lists to get mail from all the catalog companies so I can pretend during the long winter months.

Do you know the top picks of the world's smartest travelers? The best travel secrets? The best travel savings? The best (and safest) airlines? I go to the hottest of hot spots in my rocking chair by the roaring fireplace. To the "haupest" of haute spots. I travel down cobblestone lanes and coral beaches. To the most enticing places. The breath taking vistas. The glorious gardens. The acres of arbors. The coveys of quail. I savor the Seychelles. Linger in London. Rumba in Rio. Step out on the Seine. I just relax and unwind on the sidewalk cafes, parks, flower markets and in some of the world's finest restaurants.

And what does this all cost? Only a dollar an

issue! What do I get for the same sum? Australia. Alaska. Anguilla. Kyoto. Montserrat. Machu Picchu. Mythic landscapes. The most precious moments. The most priceless treasures. The most enchanting places. The most exquisite rooms.

I look through the seed catalog and plan my Spring garden. The roses of all colors. The daisies, jonquils and dogwood. I picture that luscious green salad full of my garden-picked tomatoes, peppers, onions and fresh garlic complete with olive oil filled with fresh rosemary, basil, thyme and chives from my own garden. My mouth waters.

My next catalog is laden with clothes of all kinds and colors. I choose the most exotic ball gown for my anniversary party and all the travel clothes I will take on my imaginary trip to Rome (from the other catalog) such as cashmere and pure silk and rayon. Oh, yes, I even buy a beautiful pair of Ferragamo shoes to match my Anne Klein II travel suit.

Yes, and of course, I look through the health and vitamin catalogs and order all of the latest medical wonders to make me a perfect picture of health. All of the health and fitness equipment is on my order blank too.

There is another catalog to search for the latest comfort items for my dog. All of the creature comforts you can think of are there for the asking.

Now let's go back to the first travel catalog I was browsing through. I have been dreaming long enough and now it's time to take action. I get my checkbook out and make that first deposit to the summer vacation fund. And where is our destination? Why, the Piano Technicians Guild convention, of course, in Kansas City, Missouri. The most beautiful hotel in town coupled with a delicious steak dinner for two by candlelight in the spiral revolving restaurant up on top of the hotel. The Eiffel Tower it's not, but darn close to it and a whole lot less money to get there. And besides, where could you meet and enjoy such friendship for a week on a desert island? So you see, I've had my cake and eaten it too. So much for long winter nights by the fireplace. But won't you please come and join me in Kansas City in July?

Note on top of my March 1994 calendar: Hooray for Hollywood and Rochester. They make the movies out west, but the first commercial motion picture film was manufactured by the Eastman Dry Plate and Film Company of Roches-

ter, New York on March 26, 1885.

Happy Birthday all of you
March babies out there!

I leave you with this thought:

"Yesterday is a canceled check;
tomorrow is a promissory note;
today is the only cash you have—
so spend it wisely."

Phyllis Krahmer-Tremper
PTGA President

From The Auxiliary Editor

As I write this it is January and we in the Puget Sound region are going through a warm and sunny period that hints of the Spring to come. On this date the national weather indicates that parts of the east are covered with, in some cases, unprecedented amounts of snow, and I have heard more than one mention on the radio of how fortunate we are to live here.

This is also the day of another devastating blow to Southern California. The early morning major earthquake has been of great concern to everyone. I'm sure that I can speak for all of us in hoping that the members and relatives of our PTG "family" suffered minimal property damage and very minimal personal injury. Also just today I prepared an instrument cover for shipping to the San Fernando Valley of all places. It amazes me how things can be so inter-related.

Both the heavy snowfall and its related power outages and the earthquake and all of its challenges have prompted much discussion about emergencies. Emergency preparedness agencies recommend having a stash of non-perishable foodstuffs and bottled water to last your family for 72 hours. Also extra batteries, candles, blankets and a transistor radio. Unfortunately, what we need to plan for is the possibility that a natural disaster could occur here, not somewhere else.

On a lighter note, Pearl Kreitz has written a very interesting piece

about the Pennsylvania Dutch people. I find it interesting, what with my interest in small farm operations using horse power and an equally growing interest in quilting. Also, I must be on the same wavelength about browsing through the catalogs that seem to pile up at this time of year. I've got to send in my seed order right away !!

Lancaster's Pennsylvania Dutch

Perhaps more than anywhere else in America, Pennsylvania remains true to the spirit of the past. When you step into the Pennsylvania Dutch farm country in Lancaster County, which is just 35 miles from where I live, you will think you have stepped back in time.

Lancaster County is home to North America's oldest and largest settlement of "Plain People"—a population of more than 70,000, which includes members of the Amish, Brethren and Mennonite faiths. Most of these groups share the same beliefs regarding believers' baptism, non-resistance and basic Bible doctrine, but differ in matters of dress, technology, language and form of worship.

Thousands of residents wear distinctive plain clothing and speak the German of their ancestors in a unique dialect called Pennsylvania Dutch. Horse and buggies clip-clop along rural roads, where the farmer works with his team of mules to plow, plant and harvest. This is hay, corn, grain and tobacco country. By choosing to live without cars, electricity or television, many practice a lifestyle that disappeared from America generations ago. The absence of utility lines identifies an Amish farmhouse on the horizon. Here, the Old Order Amish, the most conservative and best known, of the "Plain People," are distinguished by their dress—dark colored suits and broad, brimmed hats for men, solid colored, full skirted dresses with capes and aprons for women, with styles unchanged for centuries. The customs may appear odd to outsiders, but they are part of the Amish religious conviction based on Biblical interpretation. Today, many of the Pennsylvania Dutch

speak a blend of high German from the scripture, old German and English. One priceless Pennsylvania Dutch proverb reads, "Too soon old, too late smart."

As you'd expect, the meals are hearty in Lancaster farm country. Many small roadside stands sell fresh farm produce and home-crafted items. The most outstanding craft item is the Amish quilt. Lancaster County is the "quilt capitol of the country." In homes without T.V. or telephones, quilting bees with neighbors and friends make a good way to socialize. Before the 1960s, most of the quilts were kept in the families. Later, Amish quilts were discovered by collectors and became prized items in folk art collections, bringing a hefty price. Most of the early quilts have disappeared from the market but now Amish women make the quilts just for tourists, seeking to subsidize the family income. Today they use appliquéd designs and color schemes to fit modern bedrooms. However, traditional quilting patterns are still employed, and the quality of craftsmanship remains the best.

You will find the "Plain People" friendly to visitors, but they will not pose for photos because they consider these as "graven images" forbidden by the Bible.

Amish children attend one room schools until eighth grade. They study reading, writing, English, math, geography, history, German, music, art and the Bible. They learn less about science, technology and athletics than their worldly counterparts. Part of their education takes place at home, where they learn about agriculture, building trades and homemaking skills. The Amish place a high value on wisdom and understanding. Large families with seven to ten children are common among the Amish.

Occasionally, they are accused of being "backward"—clinging to their old customs. To this, the Amish farmer remarked, "We don't live in an overcrowded, polluted atmosphere, surrounded by drugs and crime—and they call us backward!" Perhaps he has something there!

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PIANO TECHNICIAN for large music store. Small town, great place to raise family. Cabinet touch-up/minor carpentry a plus. Send resume and salary history to Samuel Music Company, PO Box 1110 Effingham, IL, 62401. Attn: Director of Human Resources

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LITERATURE

PIANO TECHNICIANS HANDBOOK and the **Calculating Technician**, two valuable additions to your resource library. Available through PTG Home Office, 816-753-7747

SERVICES

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THE RANDY POTTER SCHOOL OF PIANO TECHNOLOGY — Home Study programs for beginning students, associate members studying to upgrade to Registered Piano-Technician, and RPT's wanting to continue their education. Tuning, repairing, regulating, voicing, apprentice training, business practices. Top instructors and materials. Call or write for information:

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KNOWLEDGE AND FELLOWSHIP! NEECSO seminar sponsored by the Connecticut Chapter at the Radisson Hotel in Cromwell, CT, April 28 - May 1, 1994. Contact: Christine Towne, 349 Weatherly Trail, Guilford, CT 06437

VIDEOS

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

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

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Display Ad Index

| | |
|----------------------------|-----|
| Baldwin Piano & Organ | 7 |
| C.A. Geers | 41 |
| Central West Regional | 33 |
| Dampp-Chaser | 30 |
| Decals Unlimited | 32 |
| Dryburgh Adhesives | 20 |
| Gavin Piano | 12 |
| Inventronics, Inc. | 32 |
| Jaymart Wholesalers | 33 |
| Kawai America | 9 |
| Lunsford-Alden Company | 33 |
| Mapes Piano String Company | 18 |
| North Bennet Street School | 20 |
| Piano Technicians Helper | 52 |
| PianoDisc | IBC |
| Pianotek | 23 |
| Randy Potter School | 3 |
| Reblitz Restorations, Inc. | 33 |
| Renner USA | 29 |
| Renner USA | 31 |
| Renner USA | 33 |
| Reyburn Piano Service | 23 |
| Samick Music Corporation | 5 |
| San Francisco Piano Parts | 31 |
| Schaff Piano Supply | 1 |
| Schroeder's Classics | 32 |
| Spurlock Specialty Tools | 26 |
| Superior Instruction Tapes | 54 |
| Wurlitzer Piano | IFC |
| Yamaha | BC |
| Young Chang | 4 |

PTG Marketing Tools Review

How Should I Take Care Of My Piano?

Written with the average piano owner in mind, this brochure covers such topics as problems and tuning needs. Basic rules of piano care are spelled out, along with advice to seek professional piano care from an RPT member of the Guild. This is an excellent brochure for individual clients and for bulk displays in piano stores and music studios.

How Often Should My Piano Be Serviced?

This brochure begins with a brief description of factors affecting maintenance frequency (climate swings, placement in the home, quality of manufacture), then presents quotes from ten piano manufacturers outlining their specific service recommendations. This is an essential tool when answering the perennial question, "How often should my piano be tuned?" The manufacturer quotes lend credibility to your advice.

The Special Care and Maintenance of the Teaching Piano

Proper maintenance is especially important to piano teachers who must provide their students with a responsive action and a musical tone to correct pitch. This brochure describes tuning needs, regulation and voicing as well as their relation to the student's ability to perform. An excellent business builder with teachers, it includes such topics as "What should my regular maintenance program consist of?", "How should I go about selecting a piano?" and "How do I find a qualified person to service my teaching piano?"

All brochures are \$150/500, \$35/100, \$20/50

Bulletin #1: Pitch Raising

This bulletin emphasizes the importance of keeping a piano tuned to A-440 for best sound and proper ear training. It explains how climate and neglect affect pitch and why the technician must perform a pitch raise before doing a fine tuning.

Bulletin #2: Regulation

Topics covered are "What is regulation and how does it affect my piano's performance?", "How often is regulation needed?", "What are the signs that my piano needs regulation?" and the difference between regulation and tuning and information on reconditioning and rebuilding. Space is included for your comments. This bulletin features a detailed diagram of a grand and vertical action.

Bulletin #3: Climate Control

Topics include, "How does humidity level affect my piano's tuning?" "What is relative humidity?" "What can be done to minimize humidity problems?" and "How will humidity control benefit my piano?" A chart is provided for recording relative humidity levels and pitch data. Together with an accurate hygrometer, this bulletin helps you in diagnosing climate-caused stability problems and recommending solutions. Clients receive educational material on the effects of climate as well as documentation of their specific problem.

Bulletin #4: Voicing

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

Bulletin #5: Finish Care

This bulletin discusses common-sense finish care tips, as well as information on various types of products and piano finishes. It also includes a section on cleaning keys.

Bulletin #6: Rebuilding and Reconditioning

Bulletin #6 defines the terms rebuilding and reconditioning and how the two terms differ. It also explains "What happens to a piano as it ages?" "When does a piano need reconditioning or rebuilding?" "What work is included in rebuilding or reconditioning?" and goes on to confirm how to decide if major repairs are appropriate.

All technical bulletins are \$90/500, \$20/100, \$12/50

*Marketing Brochures
& Technical Bulletins
available to
RPTs and Associates*

*The six-page, stapled brochures are
2-color, printed on glossy-coated
paper, and measure
9" x 3 3/4".*

*Formats are consistent among all
brochures. The three brochures
intended for customers feature a
description of PTG and RPTs on the
final inside page.*

*The technical bulletins are written
for the customer who is considering a
particular maintenance option. They
provide detailed information on
specific topics in a question-and-
answer format. The attractive,
single-page documents are printed
on heavy ivory card stock in 2 colors,
punched for a three ring binder,
8 1/2 x 11.*

*These brochures and technical
bulletins educate the public about a
wide range of piano services and the
benefits of proper maintenance. They
promote PTG as a source of qualified
technicians, and their professional
appearance projects quality onto
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*Place your order by phone by calling 816-753-7747 or use the convenient order form on the next page to place your order by
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If faxing is not convenient for you, simply complete the form and mail it to:

Piano Technicians Guild Home Office

3930 Washington

Kansas City, MO 64111-2963

Piano Discussions™

News From The World Of PianoDisc

PianoDisc techs ask: What's in store for '94?

PianoDisc's tech support division was very busy in 1993. Since January of last year we've beefed up our installation training courses, presented introductory seminars at local and national PTG gatherings, established special tech support hotlines, began issuing a regular technical bulletin, and hired a Quality Control director who, among other things, responds to technicians questions and suggestions about improving the PianoDisc system.

Of course, all you PianoDisc techs out there haven't exactly been sitting your hands, either. In the last year, you've installed thousands of systems nationwide, mostly on new or reconditioned classic pianos. And just about every piano technician we've talked to recently has run across one of the 10,000+ installed PianoDisc systems scattered across North America. All in all, '93 was a great year.

So what's in store for '94? Well, among other things, We'll be back at the annual PTG

convention in beautiful Kansas City with another introductory class on the PianoDisc system.

This class is open to all piano technicians, whether you've been through our Installation Training Seminar or not. In it, PianoDisc's Senior Installation Instructor Mark Burgett will explain the basic operation of the system, give some expertise on the tuning and regulation of pianos equipped with reproducing systems, and give valuable troubleshooting tips and diagnostic shortcuts. So, if you make it to Kansas City, stop by the PianoDisc booth for a chat!

New Classes. Also, 1994 will bring a secondary level of instruction to the PianoDisc technical training division. Remember earlier we mentioned that we're monitoring feedback from PianoDisc techs? Well, one suggestion—that we offer a continuation seminar for techs that want to learn even more about the PianoDisc—has been taken to heart.

Accordingly, we will announce dates for our series of PianoDisc Continuing Education seminars next month. Graduates of this continuation course will be able to repair or replace components in the field, install updated hardware and chips (as opposed to sending the parts back for replacement), and may be called upon to do difficult service calls—on us. So, if you're already a PianoDisc tech, start thinking about a return trip to Sacramento. It's lovely here in the spring! (Summer too!)

Of course, we'll continue with all the other tech support programs that we started last year, and we'll keep adding and improving on these as we go. And we'll continue listening to you for your comments and suggestions, so keep them coming!

So, from the bottom of our hearts—thanks for a great 1993, folks. And let's do more in '94!

Installation Spotlight - 1993



This Steinberg upright, dating from around 1905, resides in the Southern California home of movie actress **Geena Davis**. This piano was rebuilt, refinished in high polish and fitted with a PianoDisc system by **Franco Sklan** of **Precision Piano Services** in North Hollywood. Franco has done a few PianoDisc installations for celebrities, and we hope he does more in '94!

PianoDisc Installation Training

1994

- February 16-19 • March 16-19
- April 13-16 • May 11-14
- June 8-11 • August 10-13

Training is **free**, but a \$50.00 refundable deposit is required for confirmation.

For information about attending a PianoDisc Installation Training seminar, call PianoDisc at (916) 567-9999.

Our Address

PianoDisc
4111 North Freeway Blvd.
Sacramento, CA 95834

Telephone Numbers

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

Tech Support: (619) 258-1460
(510) 427-0411

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

Tech Spotlight

This month our spotlight swings towards the Ozarks, to the stomping grounds of President Clinton and her husband Bill. That's right, Robert—we're talking about YOU!

Robert Turner is a tech in Arkansas who, it seems, devotes his time exclusively to Rush Limbaugh and PianoDisc, though not necessarily in that order. He is so adept at installing and servicing PianoDisc systems that we've sent him out on the road on a few occasions to work with installed systems or perform installations in remote areas. Robert even provides routine service to a system at a resort on the beautiful, tropical island of Barbados. Robert says it takes a whole week to service their system. Yea, right.

So, keep up the good work, Bob...And thanks!

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